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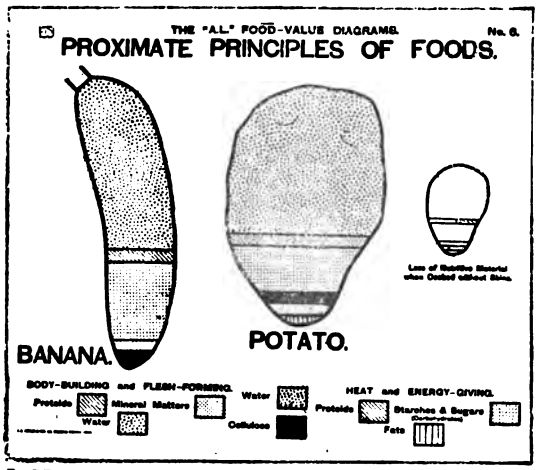

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It will naturally be demanded, What is the harm, from the point of view of health, of early "first lesson"? In answer, I point out that my contention mainly affects the winter and spring terms, when the weather is cold, the mornings dark, and more sleep is required, and that I do not press it for the summer term, when the weather is warm, the mornings light, and less sleep is needed.

The custom of work before breakfast involves a practice which is severe and two-fold.

(1) The young are extremely sensitive to cold, especially when accompanied by want of food. Both of these causes entail depression of the vital powers, with consequent poor health, and thus render the system more susceptible to disease. Cold kills the young sooner than the adult, and the young die of starvation much more rapidly than those who have arrived at maturity. The prime fact in the feeding of youth is the necessity of short intervals between meals, on account of their quicker digestion and their naturally greater demand for food, which in their case is required to fulfil the double function of restoring the loss resulting from "wear and tear" and of aiding physical growth. Moreover, their food supply should always be given in advance, so that they may possess a fund on which to draw for energy, without using material which has been expended upon the formation of tissue.

(2) The early "first lesson" curtails time which should be allotted to sleep. It is a deplorable fact that in the organisation of schools it has ever been the custom to adapt the hours of work and sleep to the requirements of the seniors, regardless of this erroneous practice upon the health and staying-power of the juniors. Seeing that upon the wise physical training of the younger children at school depend both the energy of early manhood and the endurance of later years, it has always appeared to me to be no less inexplicable than unfortunate that so meagre an attention—if attention, indeed, it may be called—has been devoted to the judicious assessment of their periods of work and sleep.

The difficulties which attend this urgent reform—difficulties which should be promptly and resolutely faced—can be met in many ways. The younger children should go earlier to bed; no evening task to prepare, and no work before breakfast should be required, while the morning and afternoon hours of work should be shortened. Work, by the existing routine, trenches upon the time demanded for rest, recuperation, and exercise, with the result that nervous energy is uselessly dissipated; and the younger the child the more disastrous is the effect produced.

It is quite clear that if the first lesson before breakfast presses injuriously, as undoubtedly it does, on the younger members of schools, the school authorities should perceive in the fact an instant duty of reform in the provision of a longer period of rest.

And as a guide in this direction I append the following table:—

THE HOURS OF WORK AND SLEEP ADAPTED TO THE VARIOUS AGES DURING THE PERIOD OF EDUCATION.

Class of School	Ages of Pupils	Hours of Work per day	Hours of Sleep per night
	Years		
Nursery	From 0 to ½	0	20
	,, ½ to 1	0	18
	,, 1 to 2	0	17
	,, 2 to 3	0	16
Infant School ...	,, 3 to 4	0	15
	,, 4 to 5	0	14
	,, 5 to 6	1	13½
	,, 6 to 7	1½	13
	,, 7 to 8	2	12½
Primary School	,, 8 to 9	2½	12
	,, 9 to 10	3	11½
	,, 10 to 12	4	11
	,, 12 to 14	5	10½
	,, 14 to 16	6	10
Secondary School	,, 16 to 18	7	9½
	,, 18 to 19	8	9
University	,, 19 to 21	8	8½
	,, 21 to 23	8	8

If sanatory science is to assume its rightful place in the conduct of school-life, breakfast must precede work, and sleep must be apportioned *pro rata* to the several ages of childhood and youth.

THE STUDY OF SPEECH SOUNDS.

By Prof. WALTER RIPPMANN, M.A.

I.

THE English have often been charged with speaking their own language badly, and with being almost incapable of pronouncing correctly any other language. The first charge is heartily endorsed by every teacher of elocution, the second by many a teacher of foreign languages. It may be of some interest to consider whether there are any means of remedying the defect indicated.

As a preliminary, it will be necessary to obtain some idea of the stages through which we pass in acquiring such command as we may possess over the sounds of the mother tongue.

The young child hears certain sounds frequently repeated, and sees the movement of the lips. In crying it makes use of the vocal chords. By imitation it learns to use its lips also, and produces its first speech sounds—the combinations *ma* and *pa*. It utters many other sounds. Its muscles serve to produce them in great variety, and it seems to show no particular preference for any of them. Its ear is untrained, and does not distinguish sounds carefully.

In course of time, after innumerable repetitions of the same sounds, the little child comes to imitate them pretty well. Some sounds which it used to produce it does not hear, and therefore ceases to produce them; other sounds are very common, and are consequently produced very often. The result is that certain muscles hardly come into play, and others are in constant use. The child acquires habits of speech.

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This is entirely the result of imitation, and, of course, the speech of the child reflects the speech of those surrounding it. If the child is left mainly to a nurse who speaks badly, it cannot be expected to speak well. If it is largely in the company of well-educated people, its speech will show their influence. The longer it associates with certain people, the more frequently it will imitate their habits of speech, and the more firmly rooted its own habits will become.

After learning by the ear only for some four or five years, the child goes to school, and is brought face to face with language from an entirely different point of view. Hitherto it has heard sounds; now it meets with letters. What is their relation to the sounds?

The object of writing is to record speech, and the original object of letters was to represent sounds. This is still their ostensible object; but in many cases they do so in a most unsatisfactory manner. The spelling of English is an extreme instance. If we lay it down as a principle that every sign should represent one sound, and one sound only, then our spelling is a singularly imperfect means of representing our speech. It is unnecessary to quote instances of the inadequacy of our spelling, but it is worth while to realise the two causes to which it is due.

In the first place, the language has changed, but the spelling has not kept pace with these changes. We write words with letters which represent a pronunciation current long ago. We are most conservative in our spelling, but very progressive in our speech.

In the second place, attempts were made at various times to make the spelling do something more than represent sounds; it was thought that it should also be a guide to the derivation of a word. Men who knew Latin regarded it as a sign of ignorance to spell *doubt* without the *b*, and so they inserted it, although they did not go so far as to pronounce it. They added the *c* in *perfect*, and in this case the pronunciation was affected by their action.

The result is that in many ways the written language no longer coincides with the spoken. To complicate matters still further, every letter has received a name which necessarily gives only one of its various values. Thus, the letter *i* was given a name which represents its value in *bite*, but not in *bit* or *machine*; and its name also represents the sound of another letter (*y*) in certain cases (*e.g.*, *my*). The *k* sound is represented by *k*, *c*, *ck*, *qu*, *ch*. It is unnecessary to adduce further examples to show that our spelling is a sadly imperfect instrument.

(Are we, then, to join the spelling reformers? At present their efforts are unheeded or ridiculed. To some extent their writings do not inspire confidence; they often propose changes which only touch the fringe of the evil. Half-hearted measures are worse than useless; if the spelling is to be reformed at all, it must be done thoroughly and scientifically. For this the nation is by no means prepared; it clings with great tenacity to the conventional form of the written language. The idea of the Bible or Shakespeare appearing in a phonetic transcription still smacks of sacrilege. Under these circumstances, it is best to realise that the first task of the spelling reformer is to make people willing to accept the change he has at heart, and this can best be done by teaching them how the language is spoken.)

To return to the child. On entering school it meets with the written language. Miss Dale has shown that it is quite possible to start from the spoken language in teaching the written; those words only are taught at first in which the spelling may be called regular—that is, in which the signs are used to represent sounds consistently. In this case, what the child knows (the spoken language) is made the starting-point for teaching what is new (the written language), and this is the only method defensible from an educational point of view. In this way the reasoning powers of the child are directed to the individual sounds, which are quite familiar to it, but which it has not yet learnt to consider separately. This has a remarkable effect in training the ear; the child acquires the habit of discriminating the sounds of speech, and of articulating more carefully.

But in nineteen cases out of twenty (or ninety-nine out of a hundred?) the method employed is a very different one. There is no natural transition from the known to the unknown. The conventional names of the letters are taught, and the sequence in which the new signs are acquired is not determined by the mode of production of the sounds. The consequence is that the difference between speech and spelling is not bridged over; the ear is not trained; faulty conceptions of the relation between letters and sounds arise in the child's mind; and it is incapable of splitting even a simple word into the separate sounds which compose it in its spoken form.

The teacher who has acquired his knowledge of the written language in the same way is equally unable to analyse the sounds of a word. He can spell faultlessly, but he has no clear idea of the way in which the sounds are produced. When the child mispronounces a word, he will notice the mistake only if it is a striking one; his ear is not trained to detect the niceties of speech. If he wishes to correct a mistake, he pronounces the word as correctly as he can, and demands an imitation of his pronunciation on the part of the pupil; but he is unable to give any directions by which the pupil would understand the nature of his mistake, because he himself has not studied speech sounds in a scientific manner.

It may be urged that many teachers go to the trouble and expense of having lessons in voice-production and elocution, and that surely they have learnt to distinguish sounds carefully and to determine what organs of speech are needed to produce any particular sound. Some acquaintance with the works of teachers of voice-produc-

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tion and elocution has led me, most reluctantly, to the conclusion that in many cases their views on the nature of speech sounds are inaccurate and misleading. I should be the last to deny that they often give most valuable advice as to the management of the voice, and that they have helped many teachers and other public speakers to avoid undue strain of the vocal organs. When, however, they approach questions of pronunciation, they often adopt an attitude which is singularly unscientific.

In saying this, I am not actuated by any feelings of hostility; on the contrary, I hope that the day is fast approaching when the teacher of voice-production will cordially co-operate with the phonetician. Both are concerned with the spoken language; both have the keen desire to make the spoken language a better instrument for the communication of thought; both desire to arouse more general interest in the cultivation of the spoken language, and to train the ear as well as the organs of speech.

The question whether the spoken language can be rendered a better instrument hardly requires to be raised; we recognise at once that some people speak well, and many badly. The important question is: How can we render the instrument better?

Those who attempt to answer the question are influenced by two considerations: the desire to improve the musical value of speech, and the desire to render it a more economical means of communication.

Those who view language mainly from the æsthetic side will search for the best way of producing fine sounds; they will study which position and action of the organs of speech produce the most musical vowels, and will pay much attention to the utterance of consonants. They will be of great service in training the actor and clergyman, the political debater and the lecturer; they will be in danger of becoming ultra-conservative, for they are likely to prefer the pronunciation of previous generations, and to assign undue authority to the written word; they will tend to give the impression of being pedantically precise in their conversational speech.

Those who view language mainly from the practical side will see in its natural development signs of progress; they will welcome anything which serves to render it easier of utterance. A reduction in the number of different unstressed vowels will seem to them a welcome simplification; they will raise no objection to the dropping of consonants, which leads to a more economical production of words; they take interest in the past development of the language, and watch its present condition, not so much with a view to improve upon it, as from a desire to record present usage, which they regard as a perfectly legitimate stage in the history of the language; they will be in danger of becoming ultra-progressive, for they are likely to prefer pronunciations which are tentative rather than established manifestations of the genius of the language, and to assign undue authority to colloquial speech; they will tend to give the impression of being slipshod when they speak in public.

Roughly speaking, the teacher of voice-production adopts the æsthetic or artistic attitude, and the phonetician adopts the practical or scientific attitude. It would be no inconsiderable gain if they learnt to appreciate the limitations of their work. Speaking as one who has given more attention to phonetics than to voice-production, I venture to believe that it is particularly the teacher of the latter subject that would benefit; for it seems reasonable to assume that before approaching the question how a language ought to be pronounced we should gain a methodical knowledge of how it is actually being pronounced. The phonetician attempts to record this, and is inevitably led also to the study of the stages through which the language has already passed. His results are the necessary basis for the work of the teacher of voice-production, so far as this is concerned with the pronunciation of speech sounds.

ON THE METHOD OF STUDYING AUTHORS: DE USU AUTHORIS. 1641.

By PROF. FOSTER WATSON, M.A.
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I.

ONE of the remarkable developments of scientific influence is the application of scientific methods to humanistic studies. In language, philological science has made great strides; in history, the theory of evolution has transformed historical studies by insisting on the principles of unity and continuity. Humanistic studies have not been dethroned. They cannot for long either abdicate or be put aside. Methods of treatment and even emphasis on the place of particular subjects may have to be reconsidered. But, pronounced as is the spirit of change, a new attitude will inevitably arise from the scientific renaissance of the nineteenth century—viz., the desire to understand more closely the significance of the older aims and methods. Amidst all the turmoil and scepticism which beset classicism at present, there is arising the sense of need to consider the old order anew. Prof. W. H. Woodward, for instance, has shown recently the meaning of the work of the classicists Vittorino da Feltre and Erasmus. We can now easily trace in their books the method of the old school-teaching. To take one instance, the disciplinary significance of the reading of classical authors, in Erasmus. What is the result of Mr. Woodward's investigation? "The general method," he says, "of Erasmus's treatment of a classical lesson reveals a remarkable touch of modern practice." We want a similarly thorough investigation into the methods suggested by Ascham, Brinsley, and Hoole, and a further inquiry to see how far the aims and methods of a Vittorino and Erasmus found their

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way into actual grammar-school practice. Light on this question can be found, I believe, from actual schoolmasters of the period, though it requires research. Thomas Farnaby, for instance, gives a section on the reading of authors in his "Index Rhetoricus." In this paper I shall offer an account of the practice of Thomas Horne, a typical schoolmaster. He was born in 1610 and died in 1654. He was headmaster of Tonbridge School from 1640 to 1648, and of Eton from 1648 to 1654.

His book on the reading of authors is thus described:—

χειραγωγία, sive Manuductio in Aedem Palladis: Quâ utilissima methodus Authores bonos legendi indigitatur: Opera Th. Horne, Art. Mag. Scholae Tunbridgiensis Archididascali. [With quotations from Quintilian, Isocrates, and Martial.] 1st edition, London, 1641.

The work is in Latin. It is divided into "Præcognita de Usu Authoris" and "Præcepta."

After speaking of grammatical preparation, on the use of the vernacular, on the application of the known languages for making the unknown easier, on the instruments for the tyro to use in oratory, on the application of the knowledge of natural and artificial things for the boy's use in writing, and on *manuduction* through the use of authors, ocular demonstration (*i.e.*, the placing of examples before the eyes of boys), custom, exhortation, on the use of oratorical poetry, on aids to memory, on repeated exercises, Horne then gives the ten fountains of invention, which irrigate the whole area of eloquence, viz.:—

1. Histories, such as those of Plutarch *in vit et moral,* Valer. Max., Herodotus, L. Florus, Livius, Justinus, Plinius, Pareus *in medulla historiae*, and Aelianus.

2. Apologues and fables, such as are to be taken from Ovid's Metamorph., Aesopi Fab., Natal Com. Muthol. Aethn.

3. Adagies, as those of Erasmus, who was the most copious collector of Adagies, and *illustrator affatim demonstrat.*

4. Hieroglyphics, in which especially the erudition of the Egyptians lay hidden, which are excellently illustrated by Pierius, Clement, Alexandrinus, Strom. l. 5, N. Caussinus, in "Horti Apollinis explicatione."

5. Emblems and symbols, which were elaborated by Alciat, Theod. Beza, N. Reusner. Nor is our Quarles *politissimus* to be covered with oblivion. To these are to be added the "Imagines Veterum Numinum," concerning which, see Vincent Chartarius de Imaginibus numinum Ethnicorum, and Pausan. *περὶ τῆς Ἑλλάδος διηγήσεως.*

6. Laws, customs, institutions of peoples, as those of the Spartans, Athenians, Egyptians, Romans, which were dealt with fully by Plutarch, Diodorus Siculus, P. Manutius.

7. Witty sentences from the ancients and moderns, such as frequently occur in Tacitus, Livy, Sallust, Lipsius, Puteanus.

8. Rhetorical figures, as we have mentioned before, as to which the most illuminating writers are Aristotle, Vossius, Farnaby, Butler, Vicars.

9. Topical points *à causis, effectis, adjunctis, contrariis*, concerning which see N. Caussin., lib. 4 de Eloq., c. 13. For these subjects are not omitted by anyone who has to deal with the matter of oratory. Discourse is best amplified if the material is brought into those forms. Therefore let the boy con over what causes, effects, adjuncts, and opposing material are to be treated.

10. The whole series of natural and artificial things, as they penetrate the mind through the senses. The treatment of artificial things may be rendered useful if the objects are arranged in pictures so that they can be glanced at by the eye, and what is suitable to the boy's powers may be fixed in the memory. See N. Caussinus, lib. 11, *e.g.*, pyramids, labyrinths, temples, churches, workmen's shops, the materials for eating, variety of cloths (*ciborum apparatus*, *mercium varietas*), furnish many helps to *invention.*

Let those who have not kept their hand from the *ferula* begin to make trial of these authors, and let them continue to do so in college; and when time does not suffice for the reading of a whole book, let the book be divided into parts, and one part only be assigned to each boy; and afterwards let them bring together their observations and collections, *ut in collegio isto Gelliano monemur.* Let the master give his aid in this collection by explanations of difficulties, and direct the boys by looking over their work. On stated days let the teacher select the most useful subjects, and show the way of proceeding to the boys; *e.g.*, if all the fifteen books of the Metamorphoses or all the books of the Aeneid are too much to be read through, let one book be assigned to this boy, another to another; let them bring the fables or histories into summaries, and, before the master, compare their collections, so each may be aware of what his companion has read, and in this manner the whole work may have been usefully gone through for the subject in hand. These inexhaustible wells are open to all; and even as in the fable of Lucian all the deeds of the world were mirrored in the Happy Islands, so there is nothing in the whole world of oratory which these wells do not show if looked into thoroughly. It will be a work worthy for the tried wits of those whose endurance has been shown, and whose judgment is adequate, to endeavour that from these wells the little gardens of their minds may be irrigated.

If, also, the pupil meet with anything in the reading of an author which may be of future assistance, why should he not hurry to avail himself of all opportunities whenever any material steals upon his notice unawares? It should not be passed by with dry feet, as they say, but let youth insert it in a commonplace book, preserve it carefully, and use it as often as the opportunity occurs. Horne is thus conscious of the mental *discipline of rhetorical exercises.*

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The basis of correct writing must be a thorough grammar, but this must be supplemented by the knowledge of authors. In the writing of compositions, inferior kinds of writing must not be neglected. But care must be given to the choice. *Colloquia* are a foundation for theme-writing. Amongst these authors, the chief for the purpose are Erasmus or Pontanus, John Lud. Vivis, Terentius. In imitation of those writers, let boys learn to compare *colloquia*, first by writing, then by holding converse with one another, for the writing of *colloquia* affords longer time for thinking to tender wits than speaking, but exercise of speaking, on the other hand, amongst themselves develops skill and confidence. In no other way can a remedy be found for that fearsome disease which invades so many schools—the neglect of Latin speech. Would that my wishes on the common complaints of men would avail with those skilled in teaching to extirpate the noxious weeds of barbarism which bid fair to ruin the prosperity of schools.

For epistles should be chosen some of the letters of Cicero to Atticus, or from Cicero to his friends. I venerate the purity of Cicero, for he who is not pleased by it despises violets and roses. Yet prolixity rarely is fit for the boyish mind, and Cicero's material is alien to the understanding of boys. For often he treats of private or forensic matters, and is only understood by those versed in such affairs. The same judgment must be made concerning the epistles of many others, if read without due selection. If Tully is not approved, then let Pliny, Politian, or Textor be selected, and from these authors let letters be chosen full of sap and conformable to the tender understanding. Otherwise you wander from the main aim. Whenever the subject-matter treated is not in agreement with the state of development of the mind of the one learning, teaching ceases and the boy does not advance and is as if stuck fast in the roughnesses of the road.

Speaking of the defects in lexicons used, Horne suggests that these must be minimised by (1) information given by the master; (2) faithful repetition and calling to mind of authors; (3) continual conversations; (4) by the choice of some book in which the whole Latin tongue is contained, such as is John Amos Comenius's (*Atlantis illius scholasticae eruditionis*) "Janua Linguarum," for so boys, by the aid of their own memory, are in place of a dictionary to themselves. After boys have run through this book once, let it be retained in memory by repeating it, amongst other works which are repeated, according to the custom of schools, before the Natalitiorum, Paschatis, Pentecostis, &c., festa.

Besides Comenius, Horne recommends the "Index Rhetoricus et Oratorius" of Thomas Farnaby, a man copiously versed in every kind of erudition, and one steeped thoroughly in literary questions. Such a book, wisely planned and arranged by such a man, cannot but be of high value. Horne's praise of Farnaby could be confirmed by much contemporary testimony.

For historical style, not far removed from the epistolary, let L. Florus, Sallustius, Livius, be read. They are a historical triumvirate whose clearness is attractive, whose nervous brevity and native purity are pleasant to all, and from them boys learn to weave together accounts of public affairs.

For oratorical style, let the orations in Livy and Sallust, collected by Brunhard Gualter, be chosen. They are mostly short, and not unsuitable for imitation by the beginner. Or, if the teacher prefers, let him choose Philippics of Cicero "pro Archiâ contra Catilinam," and not the harder orations. Let Quintilian be added, "Institutiones aut Declamationes," but let the reading of this be continuous and not broken. Selection of oratorical passages should also be made from Tacitus, Lipsius, Puteanus, Barclaius, Strada, Baudius, Cerda, Vernulaeus, Fortiscutius, Nigronius, Turnerus, Malsossius, Heinsius, Seneca, and all others, both ancient and modern, which contribute to the pith of Latinity, so that their more select discourses should be put before boys for them to reflect upon. To find such passages it will be most useful to have the "Index Oratorius" of Farnaby. When an author has been selected, next comes the use to which he is put in teaching. These uses are four, viz., ethical, critical, grammatical, oratorical.

One method constantly suggested is the boy's own collection of phrases. Horne gives, as an example:—

"I pray for your health"—for which such Latin expressions as the following may be found, and others added, *ut cum summa curâ*:—

Pro tua salute in prece totus sum. Fundo preces. Tollo ad sidera palmas. Solennia moveo vota. Tuam salutem ore precor, corde efflagito —impense rogo.

For by this method of collection of phrases the style of tyros rises higher and higher, and is fashioned to the genius of the author.

The oratorical use of authors consists in (1) translation; (2) observation; (3) imitation; (4) variation and paraphrase; (5) allusion and application; (6) in abstracting or in amplifying; (7) in finding parallels and analysis.

There is no part of Horne's book which is more valuable. He accepts Ascham's method of double translation. That most learned man Ascham brought her Serene Highness Princess Elizabeth Queen of England, and the miracle of the weaker sex, to the highest skill in Greek and in Latin reading; nor are other efforts in this direction in this century without merit—witness our master, well known for his completeness in literary knowledge and for his industry, Hezekiah Woodward, whose labours both in this and every kind of erudition have been made manifest, and, as I hope, will even more clearly be made evident to our descendants. Wherefore should my praises be given him? For he is a man, says Horne, as it were, a father of the commonwealth, who has bequeathed a patrimony to all, a treasury which will enrich the old in their wisdom,

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and the youth in the development of their wits. His works will in themselves proclaim the excellence of the man, without my words.[1]

Nor do the former merits suffer me to pass by in silence the name of my most worthy master John Kirkby, who promoted in no mean degree the labours of beginners in this exercise.

In the translation of any language, native propriety of idiom is exactly to be preserved, as confusion arises from neglect, and all elegance perishes; *e.g.*, *generosus equinus* ought to be rendered a horse of good mettle, rather than a generous horse.[2] Horne recommends Sandys's translation of Ovid and Vicars' translation of Vergil as specimens to help the pupil. For though the aim in translating is to swim without cork, yet the support of a friend's hand is no hindrance.

OBSERVATION.

1. Words should be noted, and still more clauses and phrases. 2. Errors should be corrected, so as to avoid them in the future. 3. Passages giving knowledge of persons, descriptive of places, histories, customs, manners of the Romans, Greeks, and other nations, should be entered. These subjects will include topography, laws, deeds, and observations brought under the headings of names of beasts, trees, metals, mountains, rivers, temples, feasts, as they occur in authors. In the note-book should be written down whatever explains the meaning of the author or enriches the minds of the boys. Horne then gives the following examples:—If the boy comes across the words *Pallas, Graecia, elephas, aurum*—under Pallas he will put the explanation of the name and its etymology, the duties, origin, statues, varieties of names, difference in respect of inflexion from the man of like name, the son of Evander. Under the word Greece can be shown its various names, and their explanations, the peoples which it contains, their manners, positions, districts, bordering territories, states and republics flourishing in it; and lastly, under this word can be shown that this country stood as the mother and nurse of civil life amongst the Europeans, as the author of arts and sciences, the expulser of barbarism; now under the iron yoke of the Turks. Under the word *elephas* may be shown the sagacity of this beast, his use in war and in hieroglyphics; and many other things may be recounted from Pierius and Aelianus, most worthy of being observed with regard to the elephant. Under the word *aurum* may be shown its excellence before other metals, its use for the royal crowns (as the topic is dealt with by Puteanus), and many other points concerning its sources and durability. To these points should be added, in each case, the inventors of all the more important things amongst men; for the names of authors and the circumstances of the things to be found out give much pleasure to the one who listens. Consult on this point Polydore Vergil, "De inventoribus rerum."

[1] For an account of Hezekiah Woodward see *Gentleman's Magazine*, January 1900.

[2] Dr. Joseph Webbe is equally emphatic on the rendering of Latin idiom by English idiom—in his "Appeal to Truth," 1622, and "Petition to the High Court of Parliament," 1623.

DECORATION OF SCHOOLS.

By J. W. HOLLAND, B.A.
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SOME people assert that the best mental work is done amid surroundings of a Spartan severity. A few schools one has seen seem admirably calculated to support that view.

Most of us, however, will agree that the school of to-day is not only a place to work in, but something much more than that; we shall agree, too, that surroundings have a strong influence on personality. So I assume from the outset that we wish to make our schools as attractive as possible, that in doing so we may help to create an atmosphere which shall develop the artistic sense of the children as well as assist the actual teaching given. Decoration in any form is so much a matter of taste that I do not propose to do more than offer a few suggestions on the points that occur to me.

I will deal first with the general decorations of the ordinary class-room. The colour of the walls, as we have to live with it so many hours a day, should have serious consideration. It will vary, of course, with the aspect of the room and especially with the lighting, but we may safely make one rule—it should never be a strong colour: rather of a quiet, restful tone, which need not necessarily be a dull, sombre one. We are all familiar with the garish pinks and Reckitt's blues of the average colour-wash, and we all hate them; but it is possible, by a judicious mixing of colours, to make of distemper a most artistic wall decoration. Not, however, if it be left to the decorator. I myself must confess to standing over him and his pail repeatedly, till the colour I wanted was produced. I mention distemper because it can be renewed frequently at slight cost. Washable paint, though more costly at the outset, if applied with a dull surface, produces much the same effect and saves the trouble of frequent renewal.

For the ordinary class-room a warm greyish green with dado in a much darker shade is very pleasing. Add to this a frieze of light buff and a cream ceiling, and you get a brightening touch. If there be much woodwork, let it be painted light rather than dark, the same buff shade if possible, or a good green. Light paint is not an extravagance; if well done it can be cleaned at intervals, and lasts for years; and children can be taught to respect their school walls.

If you are fortunate enough to find your schoolrooms fitted with solid wood panelling you have indeed opportunities; if the wood be ordinary deal, let it be stained a warm brown, and any soft light tone will harmonise with it for the upper part of your walls. In rooms facing north yellow will

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help to atone for the lack of sunlight, but the yellow must not be strong. A dark shade of green will show up the casts in an art room better than any other colour. For a lobby or entrance-hall, a warm Pompeian red, provided there be not too much of it, is very effective.

Floors of schoolrooms have much to answer for in causing a feeling of bareness and discomfort. We cannot all have parquet polished, but we can, at slight expense, have our ugly deal boards stained and varnished. Brunswick black thinned with turpentine makes a very good stain; this, with daily sweeping and an occasional polishing, will give a totally different look to the room.

So much for walls and floor. Desks, bookcases, cupboards, and all the usual furniture of the schoolroom, if carefully treated, may be made to fit in with the scheme of colour. Let the desks be stained dark rather than light; they wear better, and are less apt to show the ravages of ink and pencil; they will tone, too, with flooring and dado. Broad, low window-sills, if we can have them, are a great boon, providing space for plants and flowers.

Fit simple casement curtains to your windows, and you have an attractive and economical substitute for the old-fashioned blind. These can be used to exclude strong sunlight, and serve also to keep out draughts round window-frames. But again be careful about the colour. A good woollen material such as cashmere will wash and wear well.

Mantelpieces are valuable from the decorative point of view, especially if simple and good in design. A couple of bracket shelves with plain beading will suffice, but they should be of good wood. Art pottery can find its home here as well as on window-sills, and no one need regard it as a luxury so long as it can be bought in Belgium and elsewhere, good both as to form and colour, for a few pence the piece.

Even the notice board may be a thing of beauty. Not if you cover it with green baize, or even if you make it of deal, stained and varnished. The most successful notice board I have seen was fashioned out of an ordinary bath-mat; any sheet of cork would serve. It can be coloured to tone with your walls and fitted into a frame; drawing-pins are easily inserted and leave no trace behind them. The children themselves can be taught to design their monitor lists, &c.

A wood beading some six inches wide round the floor of the room and fixed to the wall effectually prevents the rub of desk against wall which is so disfiguring to the latter. A much narrower wood beading fitted to the dado line, and a second some eight or nine inches above, can be utilised to hold specimens of good work either in exercise books or on loose paper. A little care in mounting work is well expended; specimens of drawing, brushwork, &c., are much more effective if mounted on neat brown paper. This beading should run round the sides and back of the room so as not to divert attention, and also to leave the wall facing the class more or less free for the blackboard.

Now as to what we shall hang on our walls. Whatever else we hang there, let us not hang maps, permanently at any rate. Pictures let us have by all means. "A room without pictures is like a house without windows or a garden without flowers." But let the pictures be few and good if we cannot afford to spend much. Let them be chosen with a view to familiarise the children with what is best in art, rather than to help on the history, literature, or geography lesson. We can have plenty of cheap illustrations for class use to emphasise particular points. Philip's series of educational pictures, illustrating history and geography, may be put to very good use in this way. But let the pictures which are to have a permanent place on our walls be reproductions of the best work of the best artists. It is easily possible to procure these among the many forms of reproduction now on the market. Let us have examples of the Italian, Dutch, Flemish, German, French, as well as British schools, old masters side by side with the work of living artists.

It is a good plan to have the title and artist's name on a small label at the foot of each picture; it rouses a personal interest on the part of the children. If you *expect* your children to know the pictures in their rooms, and occasionally talk to them about them, you will rouse further interest. Some schools award pictures as form prizes at sports; such pictures are greatly treasured. For the class-room we should have as much variety as possible—figures, landscapes, &c. For the school hall striking figure subjects and portraits, Vandykes, Rembrandts, &c., will be most effective. Somewhere on our walls, too, photographs of famous places in Italy and Greece and of celebrated pieces of sculpture should be found. The choice is so wide that it seems useless to suggest individual pictures, but I have always found that the children are especially delighted with a reproduction of a picture they know. Take them to the National Gallery, and they will soon tell you what picture they would like next. Or, in the case of the little ones, suggest subjects, and they will generally choose something that bears on what they have been learning—"The Little Princes in the Tower," for instance, "The Children of Charles I.," or "When did you last see your father?"; even the babies in the kindergarten will delight in these. Landseer's animals, too, appeal to them strongly.

The middle school will probably like pictures of the Armada and portraits of national heroes; if we are choosing for girls, portraits by Gainsborough or Reynolds, Greuze heads, Turner's landscapes. "The Canterbury Pilgrims" is generally a great favourite. Not until they reach the upper school will they care for Rossetti, Burne-Jones, Briton-Rivière. These cannot be bought for nothing, but some forms of reproduction are less costly than others. The following firms may be relied on to give good value and a wide choice:—

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The Perry Pictures Company has a very cheap series of collotypes, size 12in. by 16in., costing a guinea for a set of eight. These include reproductions of Raphael, Vandyke, Gainsborough, Le Brun, Reynolds, Hofmann, and others. Some of these are very good, others have rather a hard line, so a careful selection must be made.

Messrs. W. A. Mansell and Co., 405 Oxford Street, W., claim to have the largest collection of permanent and ordinary photographs from pictures, frescoes, and statues at home and abroad, ancient and modern, and, indeed, their list seems endless. The photographs vary in size and price. This firm also makes a speciality of artistic frames at moderate prices.

The reproductions of the Autotype Company, 74 New Oxford Street, W., are among the best, and are permanent. They can be had in a variety of tones—black, sepia, sienna, charcoal, &c.—each of which has its particular charm. A medium size, 18in. by 12in., costs about twelve shillings, but a discount of 25 per cent. is, I believe, granted to schools.

The platinotype photographs of Mr. F. Hollyer, 9 Pembroke Square, W., are more expensive, but are works of art in themselves. Mr. Hollyer has reproduced most of the works of Burne-Jones, Rossetti, G. F. Watts, Holbein, and Botticelli.

The Art for Schools Association, Passmore Edwards Settlement, Tavistock Place, W., aims at reproducing works of art specially suitable for schools, in the form of photographs, etchings, engravings, &c., and sells them at reasonable prices. It occasionally lends and gives framed copies to poor schools. It issues a catalogue with a classed list of works; among them may be found a variety of pictures by great artists on historical subjects and a long list of portraits. The photographs of the Hellenic Society are included among those of antique sculpture and architecture.

LABORATORY NOTE-BOOKS.

By C. E. BROWNE, B.Sc.
Senior Science Master, Christ's Hospital.

"Learn what is true in order to do what is right."

INTRODUCTION.

THIS motto might be very well adopted by all science teachers for an inscription over their laboratory doors as expressing the object of their teaching, and the justification of all the money spent in the equipment of their workshops.

To learn what is true, the learner must be trained to recognise truth, however presented. Apart from actual experiment and observation, which in themselves are limited in the life of the individual, we have to depend upon books, upon words, for the greater part of our understanding, and it becomes of prime importance that the student should from the first learn how to interpret or use words correctly.

The most important function of science teachers is that of training the reasoning faculties, and therefore of training in the right use of words, of developing the power to express ideas in simple, accurate statements. In no other department of school work can the connection between thought and things be more easily brought home to the mind, and in no other way can the subtle differences between allied words or phrases be so amply illustrated by experience as in a science workshop.

In the description of simple operations of experimental science demands are made on a pupil's mental powers of the same order as in the translation of a foreign language, but with this difference—he sees *things*, not words, and has to cast about for an expression which properly describes them. I know that in the past this side of science teaching has not been much attended to, and it is for this reason that science has not made more progress in the estimation of those who have only known a classical training.

Science training implies not only a training in exact measurement and in accurate observation, but also in correct reasoning and in exact description of experience. Accuracy in expression is fully as important as accuracy in the work itself. In fact, experimental work shorn of its reasoning basis—as it too frequently is, so far as the pupil is concerned—cannot be called science at all. Even here misconception may arise. A teacher may link his facts together by the most careful reasoning; text-books may be used with which, for scientific treatment, no fault whatever can be found; yet, so far as the pupil is concerned, not a ghost of reason may have entered his mind from one or other of the sources of instruction. Only so far as he can be led to put two and two together himself, by examination of his own work or that of others, will he truly gain power to reason correctly—to judge for himself likeness and unlikeness, and, lastly, to generalise from a series of established facts.

Hence the paramount importance of a properly kept note-book, not for notes dictated by the teacher, but for expressing the pupil's own ideas, clumsy and incorrect as they may be at first, when he tries to put into words what he himself thinks, for recording his own experiences—failures as well as successes.

When it is considered how universal is the necessity for this training in clearness of expression, which is equally required in commerce, law, and politics as in science and literature, a training in the use of the mother tongue becomes an essential factor in all true education.

On these grounds alone science work justifies its place in the school curriculum. Quite apart from the many other interests it serves, the opportunities it affords in respect to such literary training are unique and far-reaching. With this ideal before us it is very necessary that laboratory notes should be carefully compiled, fully criticised, and corrected.

KIND OF NOTES.

The kind of notes that should be required from the pupil depends, of course, on the method of work and the ultimate object of the teaching.

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In all the following remarks it is assumed that the aim of the teacher is the training in scientific method and all that this implies, and not that of preparing for examination on any limited number of facts, as demanded by an examination syllabus, or arbitrarily selected by the authors of text-books.

Notes must be, in the first place, the result of individual effort on the part of the pupil. Dictated notes are generally a delusion and a snare. The only possible exception, and then it is of doubtful benefit, would be to offer an occasional alternative to an otherwise crude statement on the part of the pupil. It is best to discuss the statement, criticising various forms, and leave it to the class to adopt what form they please. It is the effort to describe adequately what is seen, felt, or believed that constitutes the backbone of the literary part of the training, together with the criticism on the part of the teacher and others.

To obtain a concise but complete and faithful description of any apparatus or operation from boys of almost any age is quite the hardest part of the science master's labours. It applies equally whether the boys have a classical training or are brought up on French and German, and in this respect supplies the strongest argument for laboratory work throughout the school. The best value is only attainable when the pupil has to describe something he has not seen or done before. The plan followed by so many teachers, of lecturing to their class and actually performing the experiment which each member has to repeat by himself, is fatal to the object referred to above, viz., that of finding words wherewith to describe things and ideas. Nor are text-books allowable in the early stages if the effort is to be real. There must be no copied expression until after the effort has been made, when discussion and criticism may have remodelled the statements.

It will be recognised that there are two stages in the note-making exercise :—

(*a*) *The Working Note-book Stage.*—Notes written at the time of the experiment, consisting for the most part of a brief statement of the object of the work, observations, measurements, and sketches. These notes should always be dated, written in ink, and seen by the teacher if possible at the time of the experiment.

(*b*) *The Essay Stage.*—Notes written afterwards, generally during the evening preparation, and based on the working notes, consisting of a connected account of the work in historical order.

The complete record of the work thus compiled should present :—

(i) The reason or motive that led to the problem, thus linking up continuously the work as it proceeds, and unobtrusively and naturally compelling revision of past work.

(ii) The object of the actual experiment described.

(iii) Description of apparatus, operation, and results, with sketches.

(iv) Criticism or comments on the results obtained, showing how far the object of the experiment has been achieved, and setting forth the pros and cons as to the interpretation of a set of results.

Age, experience, and the average ability of a class will determine the literary style, and will modify very largely the amount of independent composition possible. Three stages of progress may be roughly defined as—junior, ages 10 to 12 years; intermediate, ages 12 to 14½ years; senior, ages 14½ to 16½ years. Beyond 16 the work assumes a more advanced and technical character.

In the junior stage it is possible to introduce all the fundamental problems on the measurement of length, area, and volume in a simple narrative form. The groundwork laid then, however crude the effort, gradually leads the child, by the time the intermediate stage is reached, to work with a motive, and to treat the actual experiment as a means to an end, and not, as so often is the case, as the end itself.

In the senior classes the written work begins to assume a less formal arrangement; much of the detail of apparatus and operation is no longer needed, except when required to explain essential differences; but the use of reference books for enlarging their acquaintance with any special subject they have been attacking experimentally becomes necessary, and quotations from books, within limits, in amplification of their own experience, leads to the proper method of using text-books. The books are read incidentally as a result of their own work, and not as the guide to their work.

In a school where all elementary science is taught through the boys' own experience, the following facts about the note-books used may be of interest to readers of THE SCHOOL WORLD.

KINDS OF NOTE-BOOKS.

The note-books themselves are of two kinds :—

(1) The "Working" note-book, ruled throughout in light blue ¼in. squares, of 120 pages, stoutly bound with cloth backing (8in. × 6½in.).

(2) The "Record" book of 240 pages, similarly ruled and stoutly bound in stiff cloth-covered boards (9½in. × 7½in.).

Both books have gummed labels attached for inscribing name, address, form, &c. A stock of such labels is kept for probable changes made before the book is full. These books can be obtained from the Educational Supply Association, Holborn Viaduct, E.C.—No. 1 for 48*s.* per gross, N. 2 for 84*s.* per gross.

The ruled squares are large enough for the written work and tabulation of results. They may also be used for curves. It is considered best to have the usual curve paper in loose sheets, which can be gummed into the book when required. It has also been found useful to have the sketches and diagrams drawn on separate paper and inserted where required. The smaller size of the "Working" note-book is found to be an advantage, as taking up less room when ap-

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paratus is about, and for carrying out Captain Cuttle's advice—"When found make a note of."

When the "Record" book is commenced the master may suggest that it is to be written for publication as a text-book, as a diary, or a history, thus helping to foster a useful spirit of detail and exactness which is otherwise difficult to obtain. There is a danger of labouring this "Record" to produce a show at the expense of more useful effort, but the danger is not a serious one if the teacher is in earnest. A little thought and care spent in arranging the work in a methodical manner is not to be despised, for pride of production is a real incentive where the subject-matter is largely original.

The "Record" is divided into chapters to mark the completion of each principal investigation. Included in the "Record" are the tabulated statements of class results and the conclusions or theories based upon them, and at the end of each chapter a summary of facts learnt during, or as a result of, the investigation, is drawn up.

The extent to which it is possible to conduct the work on these lines depends, in the first place, upon the conditions as to time allotted for the subject in the time-table, the co-operation of other departments, and the estimation in which the work is held by the authorities; in the second place, upon the methods adopted for carrying on the work, the experience and ability of the teacher, and the value attached to the work by the pupils; lastly, upon laboratory accommodation, equipment, size of class and staff.

It would take too long to discuss even briefly these various points, all of which are more or less essential if science is to be an educational subject for schools. It will be necessary, however, that three conditions be emphasised briefly if this literary work is to be carried out properly:—

(i) The minimum time allotted to science should never be less than three hours per week for junior classes, four and a half for intermediate classes, and six hours for senior classes.

(ii) The number of boys in a class under one master must be strictly limited. Twenty in the case of juniors, and fourteen in the higher classes, should be looked upon as quite the maximum.

(iii) The class-time of a science master ought not to exceed eighteen hours per week, the rest of his time being required for testing new methods of work, preparation of apparatus, and the arduous task of supervision of note-books.

Much economy of time and energy might be effected by the co-operation of other departments of school work; the intensive method applied to some extent, and a well-defined educational policy to weave the whole together.

The attitude of the pupil towards his work is vital to his progress in scientific method, and can only be cultivated through the note-book and original composition. At the same time it must be remembered that the work itself must be kept alive and the notes made subordinate to the spirit of experimental inquiry; the teacher must not expect perfection, but must regulate his demands for correct notes, &c., by the many circumstances that completely control the work, and only in the senior classes should he expect completeness of treatment, by those who have grown to the system adopted. To some extent much can be done in this respect by a discrimination of what is essential in the work itself. Any problem attacked bristles with interesting developments, but while the brighter boys may be expected to follow up any side issues, the class as a whole can be guided along the main line of thought suggested in the motive previously expressed, and, as that line of thought reaches its natural goal, the teacher by his questioning may help to concentrate attention on the points that lead to the most instructive problems, unless, as often happens, the new motive comes spontaneously from one or more members of the class. Text-books or examination syllabuses are no criterion as to what is essential; that must be decided by the teacher in his estimate of the intellectual abilities of his pupils.

To keep the written work up to an efficient standard, very considerable driving-power is required. The source of this power is supplied (i) by marks and criticism; (ii) by the interest of the pupil in his work; (iii) by the value attached to the science work in the school generally.

The notes must be marked regularly, and important errors pointed out next time the class meets. It is little use correcting errors out of class-time, but the chief ones should be noted at the time of marking; common errors should form the subject of discussion with the class.

The labour involved in dealing with many books is exceptionally heavy, since it is necessary to check not only errors of facts and composition, but also of reason and method. It is therefore absolutely essential that time should be specially allotted for this work on the time-table. It would be of very great advantage if, instead of evening preparation in science, the equivalent time were given during school hours, with the science master in charge, thus giving him opportunity for marking the note-books of that or any other of his classes, an exchange being effected with those subjects which are more easily corrected and require longer evening preparation.

The third condition making for efficiency, viz., the estimate put upon the science work by the authorities of the school, and its value to the boy as affecting his chances of promotion, are more far-reaching than is realised. The Cinderella of the school curriculum—Science—has suffered much by the contempt, or slight, of those who have usually controlled or influenced the school policy. Mistakes as to the true function and high possibilities of school science have been made in the past, but it is hoped that as our experience grows we shall soon convince our most prejudiced critics that the "science workshop" stands second to none as a training-ground for the highest mental and moral development of the young.

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GLOBES AND MECHANICAL MODELS IN THE TEACHING OF GEOGRAPHY.

By J. W. Jarvis,
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I.

FROM Miss Barbara Pinkerton's "billet" to John Sedley, Esq., we learn that in Miss Amelia Sedley's geography "there is still much to be desired," though those were the days when young ladies were taught "the use of the globes and deportment." Since then publishers have been busy, atlases have been placed in the schoolboys' hands, maps are issued in the daily papers, but few care to use or can use a globe. Geography-teaching, however (thanks to the Geographical Association), has improved, and just as all roads lead to Rome, so does all good geographical teaching lead to the use and study of the globe. An outward sign of this is shown by the activity of the globe-makers, and no fewer than 500 globes have been placed in the schools under the control of the London County Council.

To attempt a logical division of the kinds of globes offered for use in schools would be impossible. The sorts overlap, differ slightly, and fulfil varied objects, but practically they can be included in the three classes: relief, smooth, and slate globes. In relief globes the mountains stand up in considerable relief (of course, out of all proportion), thus showing clearly the valleys, watercourses, plains, &c. These are specially suited for the study of physical geography. As a rule the mountains are carefully modelled and coloured brown, the plains are white, and the low-lying lands green, in accordance with the best traditions of the great German map-designers.

The price of such globes varies with their sizes and with the simplicity or elaborateness of the pedestals upon which they are mounted. Messrs. George Philip and Son, 32 Fleet Street, E.C., supply them from 12in. in diameter for £2 up to 26in. in diameter for £12 12s. The intermediate size of 16in. costs £4. Messrs. Ruddiman Johnston, 52 Hatton Wall, E.C., have a 15in. relief globe with simple fittings at £3, but with a complete brass meridian, compass, horizon, and time-dial at £4 10s. To get an idea of a 15in. globe our readers are recommended to open The School World flat and to hold it side uppermost. A globe with a diameter the same size as the length of The School World can be bought for £1 15s. from either firm, and a small one, only 6in. in diameter, costs 12s. 6d. Neither of these is large enough for class-teaching purposes. It is interesting to remember that relief globes are specially used for teaching geography to the blind.

Smooth globes are well known. They are practically maps of the world on a spherical surface, and they show the political and oceanic divisions. The more elaborate have the routes of steamers, cables, principal railway and telegraph lines marked upon them. Indeed, they are packed so full of information that very close inspection is nearly always necessary, and they are more suited for library than for school purposes. The lordly library 30in. globe, on a three-legged stand, with a brass meridian, costs £16 16s., but of late publishers have endeavoured to construct globes more suitable for class-teaching purposes and for general use in schools, and, naturally, at a cheaper rate. They show the position of the continents and oceans with sufficient clearness to be seen by a large class, and also indicate the main currents. The outlines are very bold, and no unnecessary detail is given. Messrs. Arnold, of Leeds, sell such an 8in. globe with a subdivided brass semi-meridian on a wood stand for 7s., and a 14in. globe for 24s. Messrs. Philip's 9in. globe, with a brass meridian fitted to a stained-wood pedestal stand, costs 15s., and it compares most favourably with the highest class of work of Continental cartographers. Messrs. Ruddiman Johnston claim that their globes are almost unbreakable, and their prices vary from an 8in. globe at 7s. 3d. to a 12in., with a complete meridian, for a guinea and a half. This last stands firmly on a three-footed pedestal made of metal, and the axis of the world is arranged vertically. Messrs. W. and A. K. Johnston, of 7 Paternoster Square, E.C., have placed upon the market a "New Century" globe, 12in. in diameter. It shows the latest changes in the history of the world; the British possessions are coloured red, and ocean currents and isothermal lines are marked. It has a strong metal semi-meridian, the stand is of heavy metal, and the price is £1 1s. This firm is well known for its careful printing and colouring.

An ideal globe would be one which could be suspended in the air with its axis about 23° 27′ from the vertical. As a rule, globes are supported in this position, and this, coupled with their weight, makes them rather fragile instruments in a class-room. A three-legged frame is recommended, though the circular top hides part of the globe in the same way that Saturn's rings hide part of that planet. It certainly detracts from the idea of floating in space, but the supports are stronger and the apparatus can do more useful work. Advantage is taken of the upper surface of the rim to show the signs of the zodiac and other celestial measurements. Messrs. Philip and Messrs. W. and A. K. Johnston supply an 18in. globe, strongly mounted and very clearly printed, for about £5, and this probably represents the most useful form for school purposes.

Classes are, as a rule, too large for really good globe-teaching. Groups of four boys are the best, and if these are permitted to spend half an hour occasionally, under the direction of a teacher, round a big globe, a great deal of accurate information can be imparted in an extremely pleasant manner.

Slate globes are not made of slate, but of a composition which is coated with a material similar to a blackboard, on which the outlines

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of the earth with its mountains and rivers can be drawn. The lines of latitude and longitude are clearly traced in red on the black ground of the globe, and each globe is provided with a chalk, pencil, and sponge. Such blank globes come in useful for teaching spherical trigonometry. Their prices vary from 23s. to 70s., and for an extra 20s. the makers (Messrs. Ruddiman Johnston and Messrs. G. Philip and Son) mark the outline of the continents upon them. Messrs. Philip show a most ingenious portable globe, not unlike an umbrella when closed. It consists of a framework of steel wire, covered with cloth on which is printed a map of the world. It can be expanded or collapsed at will. The cloth cover is of durable material made expressly for the purpose, and to secure permanence the colouring is produced at the press with varnish colours. The globe is about 15in. in diameter, and for the convenience of suspending it by a cord the top of the axis is furnished with a ring. It weighs less than three-quarters of a pound, and, without a stand, only costs 12s. 6d. The stand is 5s. extra. It is admirably adapted for lecture purposes on account of its portability. Between the ribs the surface is flat, so its use with quite young children is restricted. For private teaching, where each pupil can have his own globe, Messrs. Philip provide a terrestrial globe, 4in. in diameter, printed in colours, on a metal stand, packed in a cardboard box, for 1s. 6d.

It may be useful to know that old globes can be refurbished. Packed away in many headmasters' rooms and libraries are excellent globes with their surfaces dimmed with dust and age and their geographical information quite out of date. An 18in. globe can be cleaned and a new map of the world pasted upon it for about £2 15s. 6d., and a 12in. globe for £1 6s. 6d. Messrs. W. and A. K. Johnston, and other publishers, undertake this work even in cases where the original globe was not purchased from them.

In order to teach the world in its relation to the universe, a number of remarkably skilful and ingenious pieces of mechanism have been constructed. They represent with singular accuracy the phenomena attending the world's flight in space, and when seen and examined by the pupils they clear up the hazy notions which oral teaching, even at its best, is apt to produce. The Orrery is a machine that represents, by the movements of its parts, the motions and phases of the planets in their orbits. These revolve round the sun at their proper relative rates, each planet having, moreover, an independent movement by which it may be set to any given position. The diurnal motion of the earth, the seasons, the phases of the moon, and the phenomena of eclipses are also produced by the same mechanism. With a spring clockwork movement, this machine costs £25, but if made to revolve by a hand-winch it is only £7 10s., either pattern being obtainable from Messrs. Philip. Orrery is derived from the title of the Earl of Cork and Orrery, a famous astronomer.

By omitting the planets from this elaborate mechanism, a simpler piece of apparatus, named the "Tellurian," has been devised. This illustrates the earth and its relation to the sun in its actual yearly journey round that body. By means of a simple mechanical arrangement, the earth is made to approach the sun at the time of its perihelion (least distance from the sun), and to withdraw from it at the time of its aphelion (greatest distance from the sun); the inclined orbit of the moon is accurately shown, together with the various combinations occasioning eclipses, tides, phases of the moon, and the varying lengths of days and nights. From the *Journal* of the Royal Geographical Society we learn that the apparatus by which the axis of the earth is kept constant at its proper angle with its orbit, and the change of the moon's declination is brought about, is a very ingenious application of mechanics. The French design costs £6 6s., or, with a 9in. globe, £25, but Messrs. Philip sell a simpler form, called the "English Tellurian," for £2 10s. For class-teaching another Tellurian has been designed which shows the earth rotating on its axis, the moon revolving in her path round the earth, the earth and the moon making their annual journey round the sun, and the moon periodically crossing and recrossing the plane of the earth's orbit, and so illustrating the eclipses and the months of the year. This only costs a guinea and a half, and is a piece of apparatus of considerable use to any school where mathematical geography forms part of the general curriculum.

Intelligent town boys frequently come to school in the early summer asking their masters what the highly-coloured posters mean when they invite tourists to "the land of the midnight sun." And the verbal explanation (though it is really very simple) is a difficult task for anyone who has not had much time to arrange his thoughts. Very often the boys retire in confusion, feeling that it is not worth while to pursue such a mazy course any further. If, however, the school possesses a patent mechanical globe designed by Mr. W. Rice, and sold by Messrs. Philip for 25s., the difficulty and confusion fade away at once. This not only shows the arctic circle during summer in full view of the sun, night and day, but also the alternation and varying lengths of day and night, the succession of the seasons, and the other phenomena arising from the two motions of the earth. Each pupil can use it and work it; it is almost self-explanatory, and it is one of the clearest pieces of apparatus we possess. After a boy has studied it by himself, we strongly recommend that the teacher insist upon a written explanation from the pupil. There is a great difference between what we think we know and what we really know, and putting our thoughts down on paper is a most salutary process. Perhaps here we may mention the whole secret of successful work with the globe in school. Like most trade secrets, it is very simple, and, indeed, everyone knows it, but they do not think about it. It is that the pupil should study the globe

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by himself with the minimum of explanation by the teacher. If ever a little wholesome neglect is beneficial, it is when pupils are dealing personally and in actual touch with concrete things. Just as the boatman gives the skiff a gentle push off, so should the discreet teacher tell the boy just enough to start him on his travels round and about the globe. The rest may be safely left to the natural inquisitiveness of the human boy. Our geographical tours in schools are much too personally conducted, so much so that very few boys ever look at a map unless it is placed in front of their class and the teacher, armed with a pointer, stands ready for the tour.

Mr. Rice has also designed a "Selenotrope" to illustrate the various phases of the moon—a natural fact extremely difficult for pupils to grasp by verbal explanation only. It is a simple piece of apparatus, consisting of a square board upon a standard with seven phases of the moon, so arranged that by turning a globe in the centre of the board the phases from new through full to gibbous can be clearly seen. This costs 10s. 6d. from Messrs. Philip.

Another special piece of apparatus for illustrating the causes of the seasons has been arranged by Miss Cunnington, teacher of geography at the Darlington Training College. On a cardboard plane representing the ecliptic are four balls mounted on wires at right angles to each other, and at the intersection of the wires is a ball representing the sun. The four balls are painted to show how the circle of illumination falls at the equinoxes and solstices, and by carefully examining the position of each globe, when the apparatus is properly mounted, the reason for the four seasons is clearly seen. This device, accompanied by a handbook giving notes of lessons for the convenience of teachers, is sold for 21s. by Messrs. Philip.

The best combined celestial and terrestrial globe for schools has been patented by Miss Gregory for Messrs. Philip, under the name of the "Geodoscope." A 3in. globe, of white surface, with countries blocked in black, and broad bands of colour representing the equator and tropics, is surrounded by a 12in. globe of strong, clear glass mounted on a stand. On the outer globe, representing the celestial sphere, is traced in ground glass the line of the ecliptic passing through the twelve constellations of the zodiac. Through an opening in the glass there is a handle for rotating the earth, and so a real attempt is made to convey a general aspect of the earth and heavens and the stars and the sun from the point of view of a spectator on the earth. This costs £2 2s., or £1 1s. for a smaller size, viz., a 2in. earth in a 6in. globe.

The teacher who undertakes the use of the globe and other cognate forms of apparatus is strongly recommended to read chaps. x., xi., and xii. of "Physiography for Beginners," by A. T. Simmons (Macmillan), 2s. 6d. In these chapters are clear explanations of many of the problems which the study of the globe suggests, and the teacher will be prepared to answer many, if not all, of the questions put to him by a thoughtful pupil. Simple experiments are also outlined which further illustrate the complex phenomena of the earth in its relation to the sun, and add very considerably to the interest of the study of the globe.

THE ASSOCIATION OF TEACHERS IN TECHNICAL INSTITUTES.

THE formation of this association represents a distinct stage in the organisation of English education. Generally speaking, education may be divided into three branches—primary, secondary, and tertiary—the last being subdivided into technical and university, although this distinction is largely arbitrary and misleading. The organisation of education from an administrative point of view is naturally followed by the organisation of those whose life-work is devoted—although in varying degrees—to educational work in the class-room and laboratory.

Of the three branches of education, the elementary school teachers have a strong and powerful organisation in the National Union of Elementary Teachers; the secondary school assistant teachers are organised in the Incorporated Association of Assistant Masters, and the Incorporated Association of Assistant Mistresses. All of these associations have been described in The School World. For the teachers of an important section of the third branch of education we now have the "Association of Teachers in Technical Institutes," which includes among its members both technological and university teachers.

Unsuccessful attempts have been made in the past to form such an association, principally, however, in the somewhat restricted form of associations of teachers of "science and art" classes. In recent years, with the establishment and development of a large number of technical institutes or technical colleges, a new and distinct branch of the teaching profession has arisen with its own special problems and educational and professional interests. It is impossible to state accurately the number of teachers engaged in technical institute work, but probably, as a rough estimate, there are in England and Wales alone about four to five thousand, of whom perhaps half are engaged on the permanent staff, the remainder being employed in professional or trade work in the daytime, and teaching only in the evening. It has long been felt that some form of central organisation for these teachers was highly desirable—if not an absolute necessity. Taking the educational point of view first, the technical education of the country is largely controlled by the permanent officials of the Board of Education, the City and Guilds of London Institute, country and borough council education committees, organising secretaries and directors of education, and the principals of the various

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institutes. Of these, as a rule, only the principals have any practical experience in teaching, and obviously their energies must be almost entirely devoted to organising and directing. In the last resort the efficiency of technical education depends upon the teachers; hence the organisations of officials and others mainly concerned with the administration and direction of technical education must be supplemented by organisations of those engaged in actual work, day and evening, in the lecture-room, laboratory, or workshop. From the professional point of view, the need of some central organisation is urgent, both by the teacher on the one hand, and the director and administrator on the other. A professional organisation is necessary for teachers in technical institutes, which shall speak for those engaged in this branch of the teaching profession as the General Medical Council does for the medical profession, and the Bar Council and the Incorporated Law Society for barristers and solicitors.

Prior to 1904, the only association in existence was the West Riding of Yorkshire Association of Teachers of Science, Art, and Technology. The Association of Teachers in Technical Institutes was formed as follows. Informal meetings were held in May, 1904, of the staffs of certain of the London polytechnics and technical institutes. A general meeting was held at the Birkbeck College on October 22nd, 1904, when the association was definitely formed. The rules and constitution were adopted at a general meeting held on January 21st, 1905. The first annual general meeting was held on November 4th, 1905, when the annual report of the council was adopted, and officers and council elected for the ensuing year.

The general work of the association is indicated by the following list of principal matters which have been under the consideration of the council:—

(*a*) Registration of teachers.
(*b*) Syllabuses of work, examinations and inspection.
(*c*) The technical training of apprentices.
(*d*) The relationship of the association to other bodies of teachers.
(*e*) Agreements between teachers and governing bodies.
(*f*) The representation of teachers upon public examining bodies.
(*g*) The extension of the association to the provinces.

The proceedings of the association have been printed and circulated among members and prominent educationists. The Association of Teachers of Domestic Science, numbering about 600, is affiliated to the association.

The president of the association is Mr. W. J. Lineham, M.Inst.C.E., M.Inst.Mech.E., M.I.E.E., head of the engineering department, Goldsmiths' College, whose portrait we publish. The honorary secretary is Mr. J. Wilson, M.Sc., head of the chemical department, Battersea Polytechnic. The council comprises a number of the best-known technical institute teachers in London and the provinces, representing most of the groups of subjects commonly taught at these institutions. On the council are to be found principals, heads of departments, university teachers, assistant lecturers, and a strong body representing trade or evening teachers.

The objects of the founders of the association may be summarised thus:—(i) To bring together into one association all those engaged in the highly varied work carried on in technical institutions; (ii) for the promotion of educational efficiency and the professional interests of all teachers concerned. Membership of the association is open to all teachers—whether day or evening—in technical institutes, excepting those engaged solely in secondary day-school work, such teachers being regarded as belonging to the secondary branch of education. The main

MR. W. LINEHAM,
President of the Association of Teachers in Technical Institutes.

objects of the association are educational. The council of the association believes that while the teacher has a strong claim upon the community for reasonable conditions of work, salaries, tenure, and pensions by virtue of his or her services to the State, the community has a still stronger claim upon the teacher. The methods of teaching must be rendered more efficient, and there must be a higher level of educational attainments and equipment. Further, the evening teacher of the often unjustly criticised trade and technical classes represents a highly valuable type of experience. By the daily exercise of his trade or profession, he is brought into intimate contact with industrial work and the real requirements of the students. This specialised experience of educational needs should be at the service of the community, not only in the class-room, but collectively through

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an organisation, so that the requirements of the trade and industrial students should be duly considered and appreciated.

As detailed in the rules, the objects of the association are:—

(*a*) The advancement of technical education generally.

(*b*) The interchange of ideas regarding the methods of technical teaching.

(*c*) The promotion and safeguarding of professional interests in such matters as tenure, salaries, pensions, registration, training, and qualification of teachers; schemes of examination and inspection.

(*d*) To lay the views of technical teachers before the various educational authorities and the public.

(*e*) To enable teachers in technical institutes to co-operate as a body with other educational or scientific associations where desirable.

(*f*) To render legal advice and assistance to members wherever possible and desirable.

(*g*) To institute an employment bureau.

(*h*) To create a benevolent fund for needy members as soon as the society shall be strong enough to do so.

It is unquestionable that at present there is a strong public reaction against technical education, partly due to the inevitable swing of the educational pendulum, and partly to mistakes which have been made in the past. There is also a danger that the present highly necessary development of secondary education may tend to lessen the attention given to technical education. The A.T.T.I., as teachers of technical subjects and the sciences underlying these, must play its part in strenuously keeping before the public the ever-increasing necessity for technical education in its widest and truest sense.

For the improvement of methods of teaching there must be provided means of communication and intercourse among members. This the association has already provided to a certain extent by meetings of sections of teachers. The papers read at these meetings and the discussions thereon are printed in the "Proceedings." The council is anxious to develop this branch of the work. Among the subjects it is hoped to take up in this way during the coming session is "The Teaching of Mathematics to Engineering and Trade Students." The council hopes that, later, annual conferences of technical institute teachers may he held at some central town to discuss general educational and professional matters. It may be mentioned that a "Building Section" has been formed from among the London members to hold monthly meetings for the discussion of matters of interest to building-trade teachers in London. A "University Section" is now in process of formation.

The professional questions which are being considered by the association at present are principally the agreements between teachers in technical institutes and their governing bodies, and the registration of teachers by the Board of Education. As regards the former question, a valuable memorandum drawn up by the legal committee has been circulated among members. Meetings have been held to discuss the question of registration, and a series of resolutions have been passed by the association, to be brought before the Teachers' Registration Council. In these resolutions it is urged: (*a*) that a scheme of registration for teachers in technical institutes is desirable; (*b*) that a separate column (column C) be formed in the register for such teachers, without prejudice to registration in any other column.

With respect to examinations, the association —like all bodies of teachers—strongly deprecates the undue prominence of examination as opposed to inspection. Examinations being apparently practically a compulsory feature of our educational system, the association is carefully considering the various schemes of examinations and syllabuses connected with technical institute work. Thus joint meetings have been held of building-trade and engineering teachers to consider the co-ordination which should exist between the teaching of building construction and mechanics, and representations will be made to the Board of Education thereon. Further, members were invited last June to send to the council criticisms on examination papers set at the May examinations held by the Board of Education and the City and Guilds, &c., with a view of bringing cases of legitimate complaint by teachers and students to the notice of the examining authority concerned. Similar action will be taken with reference to examination results.

In co-operation with other bodies of teachers, elementary and secondary, technical institute teachers must press for:—

(i) A sound system of elementary and secondary education accessible to all, as only upon efficient preliminary training can technical education be developed.

(ii) The dethroning of the examination idol.

(iii) The direct representation of teachers upon educational and examining authorities.

Among other points of importance is the question of research. The American and Continental technical institutes are regarded as institutions not only for the diffusion of knowledge, but for the discovery of new knowledge. This must also hold good for English technical institutions. But for this to be possible there must be considerable alterations in the conditions of work, so that the staff, when qualified, shall be enabled to conduct research provided always that the teaching side of the work of the department does not suffer. There should also be further provision of research scholarships for duly qualified day or evening technical institute students.

In conclusion, the council of the association recognises clearly the difficulties ahead. The teacher's work is hard and all-absorbing, hence it is difficult to spare the time necessary for association work. This branch of the teaching pro-

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fession is widely different in *personnel*, comprising highly qualified graduates from the older and newer universities, the architect, surveyor, the trade teacher, the teacher of cookery, laundry work, and the teachers of languages and commercial subjects, all however coming under the general heading of teachers in technical institutes. In spite of these and other difficulties, the association has already achieved a great measure of success in the few months of its existence. It is hoped that during the coming session provincial branches of the association will be definitely established. The work of the association is of national importance, and upon the support of the members of this branch of the teaching profession depends the extent to which the objects and aims outlined in this article are attained.

AN INDICTMENT OF PUBLIC SCHOOL EDUCATION.[1]

THE writer of these articles, which are reprinted, with some additions, from the *Westminster Gazette*, has, perhaps, been unwise thus to publish them as a book. Their brightness and vivacity admirably suit an evening paper, but in a volume their want of weight and substance is only too apparent. The intellectual training in our great public schools is, beyond question, defective and justly open to very severe criticism. But for such criticism to be of any real service the writer of it should have a firm grasp of facts, a real knowledge of actual evils, and a clear insight into possible remedies, while he should be very chary in his use of mere rhetoric and invective. In these qualities, however, of a great critic "Kappa" is singularly deficient, as a brief account of the twelve essays or chapters which constitute his work may, perhaps, sufficiently indicate.

The first of these essays is entitled "An Undergraduate," and gives the story of an unhappy youth who, having been "captain of his school" and gained a classical scholarship, is, before he has ceased to be a freshman, already melancholy and mopish, from which fact the simple deduction is made that public school education is altogether defective. Accordingly, the author passes, by an easy transition, from this tale about a silly boy to consider what is "The Chief End of Man." All previous discussions on this vast theme he absolutely ignores. He has read that the Scottish Catechism says that man's chief end is "to glorify God and to enjoy Him for ever"; and so, jauntily putting aside the first part of the definition, he asserts that the last five words, except in so far as they "narrow the Supreme with sex," do in fact "express with perfect accuracy the chief end of man." Having then got hold of these five perfect words, he proceeds to interpret them in a manner which is absolutely opposed to their original meaning. He takes from them all their religious sense of communication with a personal God, and defines "enjoyment" as consisting in "the intellectual apprehension of the sublimities and mysteries of the universe and of the human lot." Having thus settled in a phrase the purpose of life, he proceeds to point out that there are stars which we should do well to look at, and also that there are molecules the size of which has been approximately measured, while, although he cannot grasp how certain scientific "conceptions" about their size can be "physically verified," still we have his word that such conceptions are "metaphysically inevitable." Then, too, we can learn "to enjoy the works of the Supreme Imperator"—the metaphor requires this "narrowing with sex"—"whose conscripts we are"; for, "if we cannot follow his strategy, his whole plan of campaign," yet "we can partially discern and admire his marvellous tactics." Incidentally, however, it is mentioned that the "mass of mankind" are incapable of understanding these divine tactics and thus attaining their being's end, so that this new "religion of the intellect" is in fact a revelation only intended for young gentlemen.

It is only for the select few that this modern prophet pens the articles on "Aladdin's Palace," "The Adventures of Sindbad," and "The Romance of Religion" which now follow. The first of these is an account of the world as revealed by science, or, rather, of "Kappa's" meditations as he looks out of "his study window this bright May morning," and ponders how "his educators in the Day of Wrath" will justify their failure to teach him botany and geology. The second is a dissertation on the advantage of reading history, which, after masquerading as "The Adventures of Sindbad," now reappears as "The Saga of Humanity" (sometimes with capitals and sometimes without), to which, in the next chapter, Religion is shown to lend an element of Romance. What the writer says about history and science is, for the most part, both true and trite, but his remarks about religion will surprise ordinary minds. What he means, indeed, it is hard to say, for a writer who states that St. Peter's at Rome, as "the stupendous symbol of a world-hallucination, the monster soap-bubble of an illusory metaphysic," thereby acquires for unbelievers "a significance more human and more pathetic," is certainly a writer of whose meaning no modest critic can be sure; yet he apparently wishes to show that the study of religions might be made romantic to schoolboys; and undoubtedly it might. There is no need to declaim about "admirable martyrs" and "adorable saints," for the story of the simplest soul that ever groped feebly towards the light has in it sufficient material for the best romance. Religion has assuredly its own solemn and splendid tragedies, and yet, whatever fluent essayists may say, the teacher who preferred to prate about its romance rather than to dwell upon its realities would commit the most unpardonable of crimes. Religious belief is too serious a thing

[1] "Let Youth but Know." A Plea for Reason in Education. By Kappa. 256 pp. (Methuen.) 3s. 6d. net.

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to be made a theme of declamation before boys, and the awful words once spoken against those who "offend one of these little ones" remain still true and valid.

But what does "Kappa" really mean? The first five of his ten principal chapters leave us possessed of the single fact that, in his judgment, science and history are the two branches of a liberal education. About the former, however, he says little, while mathematical teaching is dismissed with one incidental remark that much of it is "profoundly stupid"; for his real interest is with history. On this subject he is eloquent, but unhappily has yet "to hear of a single school in which the Saga of Humanity is largely and luminously revealed to the average boy." For, at least to the young, this Saga must be "revealed," not "taught." All "abhorrent manuals and synopses and summaries" being flung aside, "the process should resemble the withdrawal of a curtain and disclosure of a splendid and moving spectacle. Every lesson should end, like an instalment of a serial romance, with a tantalising 'to be continued in our next,' and the teacher (*sic*) should be held to have mistaken his vocation who should fail to hold his pupils fascinated." It is in vain that some one who is described as "a most inspiring and illuminating teacher" has pointed out to him that experience shows history to be a subject at once most difficult to handle and most doubtful in its results. "Kappa" merely smiles and says that, since "as yet there is no science of history-teaching in English schools," this is quite natural. "Remember," he adds, with delightful modesty, "that 'history,' as I employ the term, does not mean the particular group of 'knowledges' cultivated, according to their respective methods, by Gibbon or Buckle, Michelet or Mommsen."

Poor historians! They are annihilated in a sentence, and then comes the turn of classical schoolmasters. "About thirteen," it seems, a lad reaches "the parting of the ways," and should decide whether he will devote his time chiefly to science or to history, and if he chooses the latter, then "Enter the Classics"—such is the heading of chap. vii.—for literature is "the breath and life" of history. Unhappily, however, the poor boy, who is longing for the Saga, finds himself now set down by stupid schoolmasters to worship "The Fetish of Grammar" and to waste his time on "Verbal Chess-playing," so that for two chapters we have to read once more the well-known diatribes against Greek syntax and Latin verse. There is nothing new in what is said, and with much that is said about pedantic teaching of mere forms and tricks of speech all sensible persons must agree. If classical teaching is not real and living, if it does not help to produce accuracy of thought and utterance along with some taste for good literature and some sympathetic insight into the great story of human life, then it can no longer be defended. But when a writer sneers at all grammar as though it were only a study of accidental conventions, or at all composition as though it were merely a silly shifting of words, he certainly overshoots the mark. It is open to him to argue that too much time is given to these subjects, that they are badly taught, or that they are better studied in some modern language, but to flout them as wholly unimportant is obviously unjust. Nor is it possible to agree with "Kappa's" views as to the proper method of reading classics. His statements are, indeed, somewhat oracular, but he apparently holds that, as "the planet both in its physical and psychological aspects" has become "a far larger and more complex phenomenon than it was to our forefathers," we must greatly reduce the time given to Latin and Greek, while he assures us that "a living knowledge of their literature could be attained in about a fifth of the time" which we now devote to obtaining "a much narrower" acquaintance with it. How this marvellous result is to be secured he makes no real attempt to show. He contents himself with suggesting that boys should freely use translations, that they should never read Plato, because they will come away from doing so "in a crudely iconoclastic temper," and that, as "awakening the imagination" is the main point, they might sometimes study Greek inscriptions "photographically reproduced," since nothing "brings the past more vitally before us than the actual records as they were incised by the men to whom the fact was present." It is at least interesting to learn that imagination, as "Kappa" understands it, is ruined by Plato and aroused by photographs.

The final chapters on "Athletics" and on "Ethics" are of a like character. A great writer might have penned an essay on the worship of athletics in our chief schools which would have seared and burnt like a branding-iron; nor are schoolmasters so wanting in all sense of the proper purpose of their calling, so wholly without any true love of sound learning, as to have resented such an attack, however outspoken. But here we have chiefly trivialities. We have quotations [1] from some silly novel, in which masters talk nonsense, brought forward as evidence that grown men are maniacs about cricket. Or we have football described as "a valuable katharsis against atavistic promptings," but still inadequate to check that bullying which "Kappa," because he has read some stupid story in another work of fiction, asserts—though his assertion is wholly unfounded—to be still prevalent in our schools. On "Ethics," indeed, he writes with nobility and force, and his remarks on that "triviality which is at present a veritable canker of the schoolboy mind" deserve careful attention; but his main contention, that the intellectual training which he advocates will provide a sure basis of morals, seems doubtful, and is in fact only a restatement of the very disputable Socratic theory that "vice is ignorance."

[1] At an Eton and Harrow match, there are twelve minutes to play and ten runs to be made: "Warde (the author's model house-master) rises. 'I can't stand it,' he says—and his voice shakes oddly. 'You fellows will find me behind the Pavvy a'ter the match.' 'I'd go with you,' says the Rev. Septimus in a choked tone, 'but if I tried to walk I should tumble down.'" (P. 176.)

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But if it has been necessary thus to show that the writer of this volume has little claim to be a leader in educational reform, it in no way follows that his demand for reform is not wholly just. Indeed, although the means which he would employ seem to be mistaken, the claim which he puts forward for some improvement in public school education seems equally to be unanswerable; and the warm welcome which his articles have received indicates a sense of dissatisfaction which, though perhaps vague and undiscriminating, is, without doubt, widespread and, in fact, well-founded. For it would not be intemperate to say that, as regards intellectual training, our great schools are barely doing half the work which they might do, and which, unless boys educated in them are to be outpaced by boys better trained in smaller schools, it is imperative that they should do. With the increase of knowledge there must come some readjustment of studies, and classical teaching, for example, must be improved and accommodated to new conditions, unless, to our infinite loss, it is to cease wholly, as it has now partially ceased, to be an important element in liberal education.

But the fortunes of a particular branch of study are not the true and larger issue. That is concerned with the simplification and adjustment of the whole curriculum in our schools. At present all is chaos. The humours of individual headmasters, the complexities of countless examinations, the clamours of specialists or theorists, and the shifting desires of parents have turned what should be an ordered plan into a botched and bungled patchwork. Of system there seems to be almost none, and, unless those who now possess authority unite in establishing some sound and simple scheme of study, the only remedy must be sought in that central control which they not unreasonably dread. And yet, important as it is, the question of what should be taught is an infinitely smaller matter than the question of who shall teach it. It is the quality of the teacher which makes the whole worth or worthlessness of any system of education whatsoever. "Make the tree good" and "his fruit will be good," but the good fruit cannot be got otherwise, in spite of all the essayists who have written essays since the creation of the world.

Unhappily, however, from the most prominent headmaster down to the poorest assistant the intellectual capacity of pedagogues is continually, and even rapidly, deteriorating. The fact is certain; nor is one chief cause of it far to seek. No one who is concerned with public schools really cares much for intellectual capacity. Enthusiasm for learning is the poorest gift which a modern schoolmaster can possess. It is a thing little honoured, still less rewarded, and all but openly despised. The scholastic profession scorns men who are merely teachers. If a youth of parts and promise, endowed with some infelicitous zeal for the spread of knowledge, were to consult a man of the world about the wisdom of becoming a schoolmaster, the reply would certainly be: "Don't." If he pressed his wish, the next answer would be: "Then take Orders." If he were unwilling to do this, but still persistent, the final oracle would give this advice: "Play games while you are young, and, as soon as you get a House, study nothing but 'Advice to Mothers' and your own banker's book."

Such a statement is coarse and even brutal, but it is, unhappily, true. Some day, perhaps, those who now chatter and scribble and theorise about education will recognise its truth, and then there will be some chance of improving our public schools, but certainly not before. Wealthy parents now consider that the chief merit of a schoolmaster is that he be a sort of virtuous hotelkeeper; and what such parents demand, pedagogues find it profitable to supply. They ought to be "ministers of the word," and they have been driven "to serve tables." It is a mean and humiliating fact, but until some remedy is found for it, until care of the mind is counted as important as care of the body, until schoolmasters take their proper place as teachers and not caterers, every attempt to quicken the present dulness of intellectual life in great schools will be absolutely futile.

THOMAS ETHELBERT PAGE.

A HISTORY OF EDUCATION.[1]

THIS is a more serious and exhaustive treatment of the history of education than any which has yet appeared in English, and it is distinguished from most other "text-books" which have tried or affected to cover the ground in not being a mere sketch and in not being merely partial. Of the latter sort there have been many books possessing solid merit—the last, Prof. Adamson's "Contributions," as the author modestly calls it, was too late for Dr. Monroe to use—but none of them has covered the whole ground, because none has approached the subject as a sociological question of the first importance, an interpretation of the history of human societies, as an account, in fact, of the conscious efforts of human societies to improve themselves.

Or the case might be put thus: that Dr. Monroe's book is a history of civilisation and of the way in which different and successive societies saw their own weaknesses and endeavoured to arm posterity against them. The process is one of perpetual adjustment. Just as we can all devise schemes which would have educated us better than our fathers' plans succeeded in doing, so our children in their turn, face to face with developments that we cannot foresee, will devise schemes to protect our grandsons against their parents' misfortunes. For the ideal education, that which exactly fits a man to deal successfully with the circumstances which will environ him, stands to the conventional or systematised education of any age just as morality stands to law: the convention is always behindhand; the ideal is

[1] "A Text-book of the History of Education." By Paul Monroe, Ph D 759 pp. (Macmillan.) 8s. 6d.

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always ahead; the horizon is always receding. Our reach, thank Heaven, always exceeds our grasp.

"All the varieties of experimentation, all of the frequent changes in subject-matter, in method, in organisation, while they bring their evils and appear as curious phenomena to conservative educators of more stable societies, have yet this significance: they are recognitions that new principles have been formulated, new truths recognised, and that practice controlled by tradition or by principles derived from a partial view alone must be readjusted in closer accord with the new truths derived from the ever expanding knowledge of life and of nature."

It would be impossible in a review of this valuable book to do justice to its several parts. The author's plan is to emphasise "great movements" as they manifest themselves in the thought of each period treated and in its practice, and he has therefore "selected only such men and such facts as have to do with typical movements, and which consequently influence present thought and life." Every page is a text on which many pages of review or commentary might be written; but it is essentially a "post-graduate" book. Without a good deal of general reading, and particularly of history, the ordinary English education student, who is often struggling to complete an academic course whilst in training for his profession, will get little good of it.

One thing the book seems to teach very clearly, though the author could hardly have had the purpose in mind; for practical purposes, for our strengthening and our warning, the study of Greek and Roman education and of Renaissance and post-Renaissance education is incomparably more profitable than the study of anything between. How much, together, the Greeks and the Romans did for us, in this as in all that can be compassed by purely intellectual machinery! Until new physical conceptions arrived to add to the variety and content of human experience, the successors of Plato, Aristotle, and Quintilian merely played "cat's cradle" with earlier men's ideas.

Beyond question, the author is right in taking some conspicuous example of a great process, seen at work here and there and everywhere on a small scale, and in giving an account of aims, content, and method. He deals thus with primitive education, displaying it as an adjustment that ends in itself, unideal, non-progressive. He shows China a shining type of education as mere recapitulation, a deliberately organised conservatism, and, truly enough, regards it as a fair general example of Orientalism in education. (We are still Oriental, here at home, in many aspects.) The Greeks are the first conspicuous people who set themselves to give a "liberal" education, an education as "progressive adjustment." The Romans are the type of a training deliberately "practical." The Middle Ages, unprogressive (as to the world), worked out the idea of discipline (for heaven), and the Renaissance brought to birth again the liberal education. Then comes an era in which the liberal education and the preoccupations of warring theologians both influenced the schools, until "realism" set going the spirit of physical scrutiny and achievement for which we are to-day trying to find the proper place.

Amongst a thousand other things which each reader will note as suiting something in his own mind and experience, some will be glad to have the reminder that *ludus* and σχολὴ represent the school proper as a relief *from*, not *for*, the home. Little indeed can the school do if the home fails in its duty and surrounds the child with a baneful atmosphere.

And the whole of this history warns us—not, perhaps, explicitly, but clearly enough—to reduce the number of the "subjects" of our curriculum; from poetry and music alone were produced almost all the great results of Greek education, and it was all, as Dr. Monroe points out, "a doing." And, again, we have something to learn (though the author does not draw the moral) from the fact that the great games and gymnastic exercises and ceremonies and dramatic exhibitions which formed so large a part of Greek life had no *practical* value either to the State or the citizen. Yet they were types of the things best worth doing because they were done for themselves, for no ulterior motive. This is surely the great test of value.

Dr. Monroe does not always give us the references in his quotations, as we should like to have them, but he has already published a "Source Book" for the Greek and Roman period, and promises a continuation. It would be well to have there copious references to this present volume, and in the next edition of this to give cross-references.

Occasionally the author strays into jargon—says things which might be said less technically or grandiloquently: *e.g.*, "this period of fruition was as well one of transition and of origins." And "the financial nexus" is a roundabout way of saying "pay." "Dilettant" is not used commonly as an adjective, is indeed unknown to us on this side of the water, and hardly seems to have much to recommend it. Huxley was not a member of the London "City" School Board, but of the London School Board, *tout court*; and Francis Bacon was never Lord Bacon, though he was Lord Chancellor.

But these are very trifling matters. Dr. Monroe has given us an admirable book, full of meat and well-digested learning; not free, especially in the last chapters, of very controversial matter, but singularly fair and liberal on the whole. No serious student of education can afford to be without it.

History of India. By C. F. de la Fosse. 302 pp. (Macmillan.) 2*s.* 6*d.*—This useful little book was first published three years ago, and it has been reprinted some half a dozen times since. Its special feature is that it is the first in books of this size to devote half its space to the pre-British period. It has several illustrations and a map, and we can recommend it to those who cannot read larger books for the purpose of realising the history of India as a whole and our historical position there.

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THE MOST NOTABLE SCHOOL-BOOKS OF 1905.

IT is difficult for many teachers to become familiar with even the most important of the school books published during the course of a year. To assist schoolmasters and schoolmistresses to make a selection of books in the chief subjects of the school curriculum published during 1905, we have secured the assistance of experienced and competent authorities on these subjects who are each in touch with the needs of schools of all grades. Teachers who examine the books of the year enumerated below will at least have the satisfaction of knowing they have acquainted themselves with the scope and contents of the best of the school books published during 1905. In compiling their lists the experts whose aid has been obtained have not confined their attention to books reviewed in these columns. In cases where the title of a book is not a sufficient guide as to its contents, a few explanatory notes have been added.

Modern Languages.

"Der Sprachunterricht muss umkehren." By W. Viëtor. (Leipzig: Reisland.) 1s.

The new edition derives special value from the notes which Prof. Viëtor has added.

"The Teaching of Modern Languages." By L. Bahlsen. (Ginn.) 2s. 6d.

A convenient account of recent developments in modern language teaching.

"Histoire de la littérature française classique." La Pléiade. By F. Brunetière. (Paris: Delagrave.) 2s. 1d.

An excellent example of the great French critic's work.

"Histoire de la langue française des origines à 1900." Vol. I. De l'époque latine à la renaissance. By F. Brunot. (Paris: Colin.) 12s. 6d. net.

Very full; should be added to the teachers' library.

"Lectures françaises, Géographie et Histoire." By W. M. Poole and M. Becker. (Murray.) 2s. 6d.

A well-planned selection, with good questions on the text.

"Phraséologie française." By C. M. Robert. (Groningen: Wolters.) 6s. 6d.

Admirable elucidation of proverbs, idiomatic phrases, &c.

"Meisterstücke deutscher Prosa." By O. Weise. (Leipzig: Teubner.) 1s. 8d.

A very good selection, with interesting comments on style.

"Lehrbuch der Phonetik." By O. Jespersen. (Leipzig: Teubner.) 5s.

A fine handbook for students who have already some knowledge of phonetics.

"Elementarbuch des gesprochenen Französisch." By F. Beyer and P. Passy. (Cöthen: Schulze.) 3s.

The completely revised second edition of this book, which attracted so much attention on its appearance twelve years ago.

Classics.

Amongst the helps to the understanding of classical literature we may name the following:—

The first place naturally falls to Prof. Butcher's "Harvard Lectures on Greek Subjects" (Macmillan, 7s. net); a book full of discriminating enthusiasm, and one which anyone with literary tastes must enjoy.

Prof. Stewart's "Myths of Plato" translated and explained (Macmillan, 14s. net) is original in scope and treatment, and deserves study.

Mr. Dill's "Roman Society from Nero to Marcus Aurelius" (Macmillan, 15s. net) is a worthy companion to his earlier volume, although the subject is not so fresh.

Mr. Whibley's "Companion to Greek Studies" (Pitt Press, 18s. net) is an encyclopædia in little; very useful for reference.

Father Browne's "Handbook to Homeric Study" (Longmans, 6s. net) is very useful for the non-specialist student of a stage not very advanced.

Scholars' editions of importance there have been several. The chief are:—

"The Speeches of Isaeus." By W. Wyse. (Pitt Press.) 18s. net.

This book has long been wanted, and will become the standard Isaeus. It is especially useful for its notes on Attic Law, but it is in every respect good.

"Bacchylides," with introduction, notes, and translation by Sir R. C. Jebb (Pitt Press.) 15s.

"The Peace of Aristophanes." By H. Sharpley. (Blackwood.)

The year's school-books have been for the most part commonplace, many worse; books overloaded with notes, and compiled unintelligently, still come out in great numbers. We may, however, mention:—

"Greek Reader." Vol. I. Selected and adapted, with notes, from Wilamowitz-Möllendorff's "Griechisches Lesebuch." (Clarendon Press.) 2s.

Although this is too difficult for a *first* Greek reader, and also contains some late Greek constructions which might easily have been removed, it is of very great interest, and the pieces are quite fresh.

"Thucydides, Book VI." By A. W. Spratt. (Pitt Press.) 6s.

For advanced students, but it contains elementary notes.

"The Euthydemus of Plato." By E. H. Gifford. (Clarendon Press.) 3s. 6d.

An excellent edition.

"Livy XXVI." By R. M. Henry. (Arnold.) 2s. 6d.

Contains fresh matter in the notes.

We ought also to mention the final instalment of Dr. Postgate's admirable "Corpus Poetarum Latinorum" (Bell), and the texts of "Plautus," Vol. II., by Mr. Lindsay (Clarendon Press), and of "Juvenal," by Mr. Housman (Grant Richards).

English Language, Grammar, and Composition.

The year has not been marked by the publication of any *new* work of striking importance in English. There are signs of much activity in the production of quite elementary works in grammar and composition. We hope this does not mean that formal grammar is begun too early. We are glad to see the enlarged edition of the book that heads our list—

"The Elements of English Grammar." By Alfred S. West. (Cambridge University Press.) 2s. 6d.

The present writer has used this Grammar for several years, and found it very satisfactory and trustworthy for class-work. The addition of a chapter on essay writing increases its value.

"Practical English Grammar, with Exercises in Composition." By Mary F. Hyde. (Heath.) 2s. 6d. net.

Carefully done, and well named practical.

The next four are elementary books:—

"First Steps in English Parsing." By F. Ritchie. (Longmans.) 6d.

Simple, practical, sound.

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"Elementary Lessons in English." By A. T. Bott. (Longmans.) 1s. 6d.

Sensible, and likely to prove useful.

"The Mother Tongue." Book I. By S. L. Arnold and E. L. Kittredge. Edited by Prof. Adamson. (Ginn.) 1s. 6d.

Admirably adapted for beginners. Oral composition strongly insisted on.

"The Beginner's Guide to Essay Writing." By T. W. Berry. (John Heywood.) 6d.

Useful outlines.

"Punctuation: its Principles and Practice." By T. F. Husband and M. F. A. Husband. (Routledge.) 2s. 6d.

Teachers should find valuable help here on an important, but often neglected, subject.

"The Paraphrase of Poetry." By Edmund Candler. (Bell.) 1s. 6d.

Well suited to show how to get from paraphrasing its peculiar good.

"A Text-book of Précis Writing." By T. C. Jackson and J. Briggs. (Clive.) 2s. 6d.

Thoroughly practical, and on right lines educationally.

"Stormonth's English Dictionary." New edition. Edited by William Bayne. (Blackwood.) 5s.

Comprehensive and accurate. There is also a smaller edition—the Handy School Edition, 1s.

For the School Library.

"English, Past and Present." By Archbishop Trench. Edited by A. Smythe Palmer. (Routledge.) 2s. 6d.

History.

For the Use of Teachers.

"Colonies and Colonial Federation." By E. J. Payne. (Macmillan.) 3s. 6d.

An enthusiastic account, historical and geographical, of the British Empire.

"The Holy Roman Empire." By J. Bryce. (Macmillan.) 7s. 6d.

A largely revised edition of Prof. Bryce's famous work.

"A History of Modern England." By H. Paul. (Macmillan.) Vols. III. and IV. 8s. 6d. net each.

A brightly written history of England in the nineteenth century.

"The Political History of England." (Longmans.) Vol. II., by G. B. Adams; Vol. III., by T. F. Tout; Vol. X., by W. Hunt. 7s. 6d. net each.

A standard history, to be completed in twelve volumes, by specialists. Specially important by being up to date.

For Class Use.

"The Story of the British Empire for Children." By F. M. Anderson. (Methuen.) 2s.

A charming book for pupils to read for themselves.

"Mediæval British History." By J. S. Lindsey. (Heffer.) 6s. net.

A complete gulde to study, whether alone or in class.

"A Biographical History Reader." By B. A. Lees. (Black.) 2s. 6d.

Selected lives, giving incidentally much history.

"Stories from the Northern Sagas." By A. F. Major and E. E. Speight. (Horace Marshall.) 2s. 6d.

"A Brief Survey of British History." By C. E. Snowden. (Methuen.) 4s. 6d.

A series of useful summaries.

"Mediæval History." By M. A. Howard. (Horace Marshall.) 2s. 6d.

clearly told story of Europe in the Middle Ages.

For the School Library.

"A Student's History of Scotland." By D. W. Rannie. (Methuen.) 2s. 6d.

Sanely written and well proportioned.

"Illustrative History: British and Old English Period." By E. J. Bailey. "Illustrative History: Tudor Period." By N. L. Frazer. (Horace Marshall.) 2s. each.

Extracts from various writers.

"An Introductory History of England from the Earliest Times to the Close of the Middle Ages." By C. R. L. Fletcher. (Murray.) 5s.

The work of an enthusiast in making history "live."

"Short Lives of Great Men." By W. F. Burnside and A. S. Owen. (Edward Arnold.) 3s. 6d.

Forty-four biographies, well told.

"Captain John Smith." By A. G. Bradley. (Macmillan.) 2s. 6d.

A life of the Virginian hero.

"The Story of the Town of Reading." By W. M. Childs. (Long.)

An instructive reading-book about a typical town and its connections with English history.

Geography.

For Pupils' Use.

"An Introduction to Practical Geography." By A. T. Simmons and H. Richardson. (Macmillan.) 3s. 6d.

Chief feature, a collection of admirable exercises.

"Laboratory and Field Exercises in Physical Geography." By Gilbert H. Trafton. (Ginn.) 2s.

Exercises mostly American, but good and suggestive.

"Object Lessons for Juniors." By F. H. Shoosmith. (Charles and Dible.) 2s. 6d.

Numerous exercises.

"School Geography." By Charles Bird. (Whittaker.)

Plenty of "facts" for examinations.

"The Junior Geography." By Dr. A. J. Herbertson. (Clarendon Press.) 2s.

Contains much excellent matter and many suggestive maps.

"Globe Geography Readers. Intermediate." By Vincent T. Murché. (Macmillan.) 1s. 9d.

"Europe and the Mediterranean Regions." By J. B. Reynolds. (A. and C. Black.) 2s.

"The British Empire." (Nelson.) 1s. 10d.

One of the "World and its People" Readers.

"Round the Empire." By Dr. G. R. Parkin. Preface by Lord Rosebery. New edition. (Cassell.) 1s. 6d.

"Handbook of Commercial Geography." By G. G. Chisholm. Fifth edition. (Longmans.) 15s.

This is, without a doubt, the standard work on economic geography.

Books for the School Library.

"The St. Lawrence Basin." By Dr. S. E. Dawson. (Lawrence and Bullen.) 7s. 6d.

"The Siege of the South Pole." By Dr. H. R. Mill. (Alston Rivers.) 7s. 6d.

Two of Dr. Scott-Keltie's "Story of Exploration" series, and both most interesting and instructive volumes.

"Canadian Life in Town and Country." By Morgan and Burhee. (George Newnes.) 3s. 6d.

"The Far East." By Archibald Little. (Clarendon Press.) 7s. 6d.

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One of Mr. Mackinder's "Regions of the World" series.

Atlases.

"Historical and Modern Atlas of the British Empire." By C. G. Roberts and J. G. Bartholomew. (Methuen.) 4s. 6d.

"The Oxford Atlas of British Colonies: Part I., British Africa." (W. Stanford.) 2s. 6d.

"Murray Small Classical Atlas." By G. B. Grundy. (Murray.) 6s.

"Atlas of Commercial Geography." By R. Ferguson Savage. (W. and A. K. Johnston.) 5s.

Well got up, but to be used with care and caution, and not without constant verification.

"The World's Chief Industries." (Philip.) 2s.

Twelve maps from "Commercial Intelligence"; very graphic; showing production and distribution of certain well-known commodities.

Wall Maps.

"Philip's Comparative Series of Large Schoolroom Maps: S. America, Asia, World, British Isles." (Philip.) 16s.–18s.

"Stanford's New Orographical Series: Africa, Lancashire and Cheshire." (Stanford.) 16s. and 15s.

Both sets most excellent as physical bases for class-teaching.

Mathematics.

"Easy Mathematics. Chiefly Arithmetic. Being a Collection of Hints to Teachers, Parents, Self-taught Students and Adults; and containing a Summary or Indication of most things in Elementary Mathematics useful to be known." By Sir Oliver Lodge. xv.+436 pp. (Macmillan.) 4s. 6d.

The earlier chapters contain an admirable exposition of the nature and philosophy of the operations in arithmetic. Part II. contains the applications of the subject to various easy and useful branches of physics. The book is extremely useful to the teacher, and not less so to the advanced pupil who is in a position to inquire into the philosophy of the subject.

"Elementary Algebra," with Answers. By W. G. Borchardt. vii.+491+lxiii. pp. (Rivingtons.) 4s. 6d.

Proceeds from the very beginning by the easiest stages, illustrating the fundamental operations by graphic constructions on squared paper; takes simple equations very early—much before H.C.F., &c. It is scarcely possible that a more simple work could be found for the beginner; interest is well maintained by very copious graphic illustration throughout.

"Advanced Algebra." By Herbert E. Hawkes. xiii.+285 pp. (Ginn.) 6s. 6d.

In spite of the title, the work is suitable to the higher classes in schools. In addition to the usual school course, it contains a short discussion of determinants and the prominent principles of the theory of equations, with much graphic illustration.

"Examples in Algebra." By Charles M. Clay. vii.+372 pp. (Macmillan.) 4s.

A very extensive collection, about 8,000, proceeding from the most simple operations, and illustrating all branches of the subject usually contained in text-books.

"Geometrical Conics." By G. W. Caunt and C. M. Jessop. 80 pp. (Edward Arnold.) 2s. 6d.

A very small and handy book confining itself to the proofs of the fundamental properties. Founds the subject on sections of a cone, instead of the usual focus and directrix definitions. A very simple and useful companion to analytical work.

"The Elements of Analytic Geometry." By Percey F. Smith and Arthur Sullivan Gale. xii.+424 pp. (Ginn.) 8s. 6d.

Like many American works, very helpful to students who have to work by themselves; appeals to the higher classes in schools; contains a thorough discussion of properties of conics, methods of inversion, reciprocation, curve tracing; a great wealth of excellent figures.

"Elementary Trigonometry." By H. S. Hall and S. R. Knight. xv.+415 pp. (Macmillan.) 4s. 6d.

A new edition enlarged, containing much logarithmic work and tables of four-figure logarithms, natural and logarithmic sines, &c. A selected course for first reading is given.

"An Introduction to the Calculus, based on Graphical Methods." By George A. Gibson. vii.+225 pp. (Macmillan.) 3s. 6d.

This may be regarded as the school introduction to the author's larger volume, which has attained a high place among works on the calculus. An intelligent pupil can work through most of the smaller book with but little assistance from the teacher.

"Integral Calculus for Beginners." By Alfred Lodge. vi.+203 pp. (Bell.) 4s. 6d.

Contains in a comparatively small space the usual course in the subject, together with a chapter on approximate methods (Simpson's rule, &c.), a short chapter on moments of inertia, and two chapters on the elementary parts of differential equations.

"Elements of the Differential and Integral Calculus." By William Anthony Granville. xiv.+463 pp. (Ginn.) 10s. 6d.

There is no better book for teachers and for students who have to work without much help. Quite suitable for schools in which the subject is taught; contains a very large number of excellent figures.

"A Note-book of Experimental Mathematics." By C. Godfrey and G. M. Bell. 64 pp. (Edward Arnold.) 2s.

A series of quantitative experiments in various departments of elementary mathematics and physics, all quite suitable to schoolboys. The book should be very useful to teachers, and especially to candidates for the Army qualifying examination. (The authors should not speak of "Kaytor's" pendulum.)

"Mechanics for Engineers, a Text-book of Intermediate Standard." By Arthur Morley. xi.+282 pp. (Longmans.) 4s.

Well suited to schools, and to beginners generally, although its title implies technicality which the book does not possess. The important principles of energy and momentum are prominent and well illustrated. Contains both statics and kinetics, with many examples.

"Mechanics: a School Course." By W. D. Eggar. vi.+288 pp. (Edward Arnold.) 3s. 6d.

A very fresh and interesting book, in which a course of experiment is taken concurrently with mathematical theory. The fundamental experiments of Galileo are quoted and explained, and these cannot fail to arouse the interest of the student.

"An Intermediate Course of Mechanics." By A. W. Porter. viii.+422 pp. (Murray.) 5s.

Useful mainly to teachers, and quite suitable to school work. Teaches sound and modern notions, and contains a considerable number of examples, as also a chapter on the equilibrium of fluids.

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Physics and Chemistry.

Physics.

"Elementary Experimental Science." By W. M. Heller and E. G. Ingold. (Blackie.) 2s. 6d.

"A Further Course of Practical Science." By G. H. Leonard and W. H. Salmon. (Murray.) 2s.

This is a continuation of Mr. Leonard's "First Course of Practical Science."

"Second Stage, Magnetism and Electricity." By R. W. Stewart. (Clive.) 3s. 6d.

"Notes and Questions in Physics." By J. S. Shearer. (Macmillan.) 7s. 6d. net.

"Magnetism and Electricity for Students." By H. E. Hadley. (Macmillan.) 6s.

"Elementary Physics (Practical and Theoretical). Third Year's Course." By J. N. Brown. (Blackie.) 2s.

"An Introductory Course in Practical Physics." By J. Moffat. (Oliver and Boyd.)

Chemistry.

"Conversations on Chemistry." Part I., General Chemistry." By W. Ostwald. Authorised translation by Elizabeth C. Ramsay. (Chapman and Hall.) 6s. 6d. net.

A perfect appreciation of the pitfalls which beset the pupil in the early stages of learning.

"Notes on Volumetric Analysis." Enlarged edition. By J. B. Russell and A. H. Bell. (Murray.) 2s.

Useful for Teachers.

"Maxwell's Theory, and Wireless Telegraphy." By H. Poincaré and F. K. Vreeland. (Constable.) 10s. 6d. net.

The author demonstrates successfully that the theory can be translated into the language of everyday life without resorting to mathematics.

"Experimentelle Elektrizitätslehre." By H. Starke. (Teubner.) 6 marks.

A very up-to-date and excellent elementary account of the subject.

"Recueil d'Expériences élémentaires de Physique." Part II. By H. Abraham. (Gauthier-Villars.) 6.25 francs.

A collection of experiments in acoustics, optics, electricity, and magnetism.

"A Text-book of Physics. Heat." By J. H. Poynting and J. J. Thomson. (Griffin.) 15s.

The third volume of a well-known text-book.

"High Temperature Measurements." By H. le Chatelier and O. Boudouard. Second edition. Translated by G. K. Burgess. (Chapman and Hall.) 12s. 6d. net.

"Theoretical Chemistry." By W. Nernst. Revised edition. (Macmillan.) 15s. net.

"A Treatise on Chemistry." By H. E. Roscoe and C. Schorlemmer. Vol. I. New edition. (Macmillan.) 21s. net.

Natural History.

Botany.

"The Uses and Wonders of Plant-hairs." By Kate E. Styan. (Bemrose.) 1s.

A good subject for a course of nature-study.

"Trees. Vol. III. Flowers and Inflorescences." By H. Marshall Ward. (Cambridge University Press.) 4s. 6d.

A useful book for field-work in summer.

"Wayside and Woodland Blossoms." First and second series. By E. Step. (Warne.) 6s. each.

Revised edition with new plates; useful for identifications.

"Experiments with Plants." By Dr. W. J. V. Osterhout. (Macmillan.) 5s.

Contains many experiments suitable for a course of elementary physiological botany; the appliances are all of a very simple character.

Geology.

"The Face of the Earth." Vol. I. By Prof. E. Suess. Translated by Dr. H. B. C. Sollas. (Clarendon Press.) 25s.

An advanced text-book of first-rate importance; deals mainly with the geology of the mountains of the world.

"Landscape in History, and other Essays." By Sir A. Geikie. (Macmillan.) 8s. 6d.

Discusses the effect of geographical environment and of geological changes in determining the distribution of population and of the centres of government and of commerce; and also in influencing literature and the interpretation of history.

Nature-study.

"Stories from Natural History." By Richard Wagner. Translated by G. S. (Macmillan.) 1s. 6d.

Suitable for a reading-book in the higher standards of elementary schools, and the lowest of secondary.

"The Country Day by Day." By E. K. Robinson. (Heinemann.) 6s.

A guide to what the observant country resident ought to see and notice.

"Peeps into Nature's Ways; being Chapters on Insect, Plant, and Minute Life." By J. J. Ward. (Isbister.) 7s. 6d.

"Nature through Microscope and Camera." By R. Kerr. (Religious Tract Society.) 6s.

Deals with a number of easily obtained objects. Beautifully illustrated by photomicrographs.

"Practical Nature-study for Schools. Part I., A Note-book of Questions." 2s. 6d. "Part II., Answers (for Teachers only)." By O. H. Latter. (Dent.) 6s. net.

Part I. contains a large number of questions on many suitable subjects. Blank pages and spaces are left for the pupils' answers and drawings. The questions can only be answered as the result of direct personal observation.

"Nature-study Lessons for Primary Grades." By L. B. McMurry. (Macmillan.) 2s. 6d.

American, but very suggestive for elementary biology for pupils of tender years.

Zoology.

"A Students' Text-book of Zoology." Vol. II. By Adam Sedgwick. (Sonnenschein.) 21s.

An advanced book on amphioxus, fishes, amphibians, reptiles, birds, and mammals.

"The Story of Reptile Life." By W. P. Pycraft. (Newnes.) 1s.

The outline of a scientific treatise in non-technical language.

"Wasps, Social and Solitary." By G. and E. Peckham. (Constable.) 6s.

A record of field-observations in N. America.

The Nelson Navy Book. By J. C. Hadden. 303 pp. (Blackie.) 6s.—This is essentially a "boys' book," written in glowing terms, and illustrated with gorgeous pictures in colour and in black and white. The story of our navy is told from the early fights with Danes down to the present day, and the last chapters tell of the "manning of the navy," "how to join the navy," and "training for the navy."

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THE PLACE OF SCIENCE IN GENERAL EDUCATION.[1]

THE importance to every man of a practical acquaintance with elementary science is obvious. Would it be thought possible that any nation could act so absurdly as to teach its children other languages, and leave them in complete ignorance of the tongue of the land in which they would have to pass their lives? Would it not then be incredible, if it had not become a too familiar fact, that the public schools have, until recently, excluded all teaching of the science of nature from their scheme of studies, though man's relation to nature is more intimate than to his fellow-countryman? We live, move, and have our being in nature; we cannot emigrate from it, for we are part of it. Yet our higher education leaves men, who in other directions are well informed, much as deaf-mutes in the presence of nature. They do not hear her most imperative warnings, and can only get on haltingly in their everyday intercourse with the natural forces to which their lives are subjected by means of the arbitrary signs of empirical custom. The recent introduction of some amount of science-teaching in our higher schools is quite inadequate, alike in kind and in degree. It can be only through a reform of the scheme of their examinations by the universities that we can hope to see science take the equal part with the humanities in general education to which she is entitled.

The place of science in general education may be considered under two different aspects: the intrinsic value of the teaching of science as a means of enlarging the powers of the mind; and, secondly, its relative value and place as compared with the teaching of the classics.

The elements of the science of nature, when properly taught, have a claim to a very high place in early general education, since nature is always close about us as a living intelligence and power, which responds to the questions put to her by experiment. The young mind finds itself no longer in the realms of the dead, deciphering from the inscriptions on their tombstones the history and opinions of past generations, invaluable as is such knowledge in its proper place, but in the open of light and life, where nature holds her school, taking all things, great and small, as the object-lessons of her teaching.

Two faculties of the mind which it is of the highest importance, especially in early youth, to enlarge and develop by exercise are wonder and imagination. Under the ordinary premature language-teaching of the grammar schools, even the wonder and imagination natural to young minds become so stunted in their growth as to remain more or less dormant throughout life. On the other hand, natural science brings them into full activity and greatly stimulates their development. Nature's fairy tales, as read through the microscope, the telescope, and the spectroscope, or spelt out to us from the blue by waves of ether, are among the most powerful of the exciting causes of wonder in its noblest form; when free from terror it becomes the minister of delight and of mental stimulation.

And surely the master-creations of poetry, music, sculpture, and painting, alike in mystery and grandeur, cannot surpass the natural epics and scenes of the heavens above and of the earth beneath in their power of firing the imagination, which, indeed, has taken its most daring and enduring flights under the earlier and simpler conditions of human life when men lived in closer contact with nature, and in greater quiet, free from the deadening rush of modern society. Of supreme value is the exercise of the imagination, that lofty faculty of creating and weaving imagery in the mind, and of giving subjective reality to its own creations, which is the source of the initial impulses to human progress and development, of all inspiration in the arts, and of discovery in science.

Further, elementary science, taught practically with the aid of experiment during a boy's early years, cannot fail to develop the faculty of observation. However keen in vision, the eyes see little without training in observation by the subtle exercise of the mind behind them. From the humblest weed to the stars in their courses, all nature is a great object-lesson for the acquirement of the power of rapid and accurate noting of minute and quickly-changing aspects. Such an early training in the simpler methods of scientific observation confers upon a man for life the possession of an inexhaustible source of interest and delight, and no mean advantage in the keen competitions of the intellectual activities of the present day.

Training in the use of the eyes develops, at the same time, alertness of the intelligence and suppleness of the mind in dealing with new problems, which, in after-life, will be of great value in facing unforeseen difficulties of all kinds, which are constantly arising.

Science, practically taught, does more, for, under the constant control of his inferential conclusions by the unbending facts of direct experiment, the pupil gradually acquires the habit of reasoning correctly from the observations he makes. In particular, he learns the most precious lesson of great caution in forming his opinions, for he finds how often reasoning, which appeared to him to be flawless, was not really so, for it led him to wrong conclusions. Further, from the constant study of nature, the student comes so to look at things as almost unconsciously to discriminate between those which are essential and those which are only accidental, and so, gradually, to acquire the faculty of classing the facts of experience, and of putting them in their proper places in a consistent system or theory. Are there any other studies, it may be asked, by which, in the same time, a young mind could develop an equally enlarged capacity for correct reasoning and acquire so wide an outlook? Yet, notwithstanding the immense intrinsic value of its teaching, science is but one of the studies which are necessary for a wide and liberal education. Intellectual culture, or, in other words, the whole mind working at its best, requires, besides the training of all its powers harmoniously by the study of nature, an acquaintance with many other kinds of knowledge, especially of human history and the development of human thought, and of the human arts. Humanistic studies and experimental science are equally essential, and, indeed, complement each other. Either alone leaves the mind unequally developed, and its whole attitude one-sided, and so produces a narrow type of mind which is incapable of taking a wide view even of its own side of thought, and has but little sympathy with any subject outside it.

In the scheme of a liberal education, literature and languages, which include the habit of clear thinking in suitable words, should have a large place. It must, I think, be conceded that the languages of ancient Greece and Rome, which are highly developed for the conveyance of delicate shades of thought, still stand unsurpassed as means of training in thinking in association with correct expression, while, at the same time, they feed the mind with the great ideas and the heroic deeds of the past.

[1] From an address delivered at the anniversary meeting of the Royal Society on November 30, 1905, by Sir William Huggins, K.C.B., O.M., president of the Society.

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In the methods of study of these languages, as actually carried out in the public schools, surely great reforms are possible. The complaint of the classicist, John Milton, who had himself been a schoolmaster, in his "Tractate on Education," written about twenty years before the foundation of the Royal Society, is urgently true to-day. He wrote: "We do amiss to spend seven or eight years merely in scraping together so much miserable Latin and Greek as might be learned otherwise easily and delightfully in one year." Later, Evelyn made a similar complaint. "At most schools," he wrote, "there is a casting away of six or seven years in the learning of words only, and that, too, very imperfectly."

Quite recently, the number of years usually given to Latin and Greek in the public schools has been shown by a striking experiment to be greatly excessive.

Last March, the Minister of Education gave an account in the Prussian Chamber of the so-called "reform schools," in which the study of the classics is begun for Latin at twelve, and for Greek not until the age of fourteen, with the encouraging result that, of 125 pupils who presented themselves for the leaving examination, only four failed to pass, and, of these four, three succeeded three months later. Experience showed that, as the result of beginning Latin and Greek at a later age, the interest of the pupils in their work was much keener, and their progress much more rapid.

Improved methods of teaching the classical languages which would permit of the beginning of the study of them at a later age would leave ample time for an early training in experimental science, which must soon come to be recognised as an essential part of all education.

In future, no grammar or higher school should be considered as properly provided for unless furnished with the necessary apparatus for teaching experimentally the fundamental principles of mechanics, physics, and biology. The pupils should have the use of a small astronomical telescope, and of microscopes for biological work. Such apparatus and instruments can now be purchased at a very small cost.

Clearly, it is only by such a widening of the general education common to all who go up to the universities, before specialisation is allowed, that the present "gap between scientific students careless of literary form, and classical students ignorant of scientific method," can be filled up, and the young men who will in the future take an active part in public affairs, as statesmen and leaders of thought, can be suitably prepared to introduce and encourage in the country that fuller knowledge and appreciation of science which are needed for the complete change of the national attitude on all science questions, which is absolutely necessary if we are to maintain our high position and fulfil our destiny as a great nation.

THE BOARD OF EDUCATION AND SECONDARY SCHOOLS.

The report of the Board of Education for the year 1904–5, which has now been published, contains an interesting section dealing with the relations of the Board to secondary schools. The following particulars are taken from this part of the report.

The regulations for 1904–5 did away with the distinction of recognised secondary schools into Division A and Division B schools, and by defining what is meant by a secondary school as recognised by the Board and by establishing a uniform scale of grants, encouraged the better organisation of this important grade of school on lines suited to the needs of different localities. The wider basis upon which the grants were then placed for the first time has had important results, and the number of schools recognised during 1904–5 rose from 482 (the number recognised in the previous year) to 576, while it is estimated that the number of scholars taking the approved course will be 63,782 as compared with 52,466 in the previous year.

The number of secondary schools recognised or in course of recognition has during the current year further increased to 705, or more than three times the number of secondary schools and classes in receipt of Government grants five years ago. During the same period the amount of the grants earned has increased by more than £100,000.

The regulations issued in April, 1905, contained further changes, which will secure to the schools greater elasticity in their organisation and curriculum, and carry out more fully the principle on which the regulations of last year were based.

The policy of the Board, in apportioning the limited funds placed at its disposal by Parliament for the purpose of promoting the efficiency of secondary schools, is one of concentration on that part of the work which seems to the Board to form the kernel of the course these schools offer, or should offer, no matter what their type. The particular grants in support of particular branches of instruction formerly made to these schools, or to classes in them, have therefore been merged in the main grant payable for the approved four years' course beginning at twelve years of age or upwards. The only exception made is in the case of schools which, not being able to qualify for full recognition as secondary schools, have been hitherto aided by grants to "science and art day classes." If there is reasonable prospect of their qualifying after another year for full recognition under these or other regulations of the Board, the grants may be continued during that period.

Where a school, after a reasonable interval of time, cannot reach the necessary level of efficiency, because it fails to carry an adequate proportion of the scholars through the third and fourth years of the complete course, the Board will withdraw its recognition and will cease to make grants. Such a school will not, in fact, be a secondary school. It is a source of satisfaction to the Board to note that school authorities have in many cases taken steps to ensure that scholars shall not, without good reason, be withdrawn from school before completing the course, a policy which the ascending scale of grants for the four successive years can hardly fail to support. The Board is also glad to be able to report that an arrangement has now been made by which "a school already in receipt of grants which is certified as being satisfactorily conducted according to the regulations will receive during the session a payment on account, in advance, amounting ordinarily to one-half of the grant received for the previous session."

No change has been made in the new regulations so far as regards the general character of the course which the Board expects all schools receiving a grant to provide, but certain modifications have been made in the details of the regulations which allow schools of proved efficiency greater freedom in the organisation of their work.

The minimum number of hours required for mathematics and physical science has been slightly reduced, but otherwise the hours allotted to each of the three main groups of subjects remain the same as last year, save that in girls' schools which do not have regular afternoon classes the requirements as to the amount of time to be devoted to these groups of subjects may be relaxed to

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meet particular circumstances provided the instruction in them is good and sufficient. Whatever views may be held as to the amount of instruction desirable in girls' schools in comparison with those for boys, it is clear that the claims on a girl's time out of school hours are larger and more varied than they are on that of a boy, whilst the dangers of overpressure are at that age much greater. The compression, however, of all the school work into the morning hours may in turn lead to overpressure quite as serious as that which results from too long a school-day. The intensive method of teaching, if it is thoroughly carried out, puts a greater strain both on the pupil and on the teacher than the older ambling ways, and it is doubtful whether a school session for either boys or girls should ever exceed three hours. When it reaches this limit, therefore, the regulations allow the afternoon meeting to be reduced to an hour and a half. Further, in a secondary school of any kind favourably reported on by the Board's inspectors, in respect of instruction and organisation, deviations from the approved time-table may be allowed, with the inspector's previous approval, in order to meet the temporary needs of a particular class or a particular branch of instruction. It will be required in such cases that the spirit of the regulations is observed and no diminution made in the time required to be given during each year to any group of subjects.

Although it would be inexpedient and unjust to withdraw approval, and the support given hitherto, from those schools which have already been organised with a curriculum which is specialised from the first on the side of applied science, if it can be shown that such a course is suitable to the circumstances of the locality in which the school is placed, yet it is not the intention of the Board to sanction the adoption of this special course in any fresh school.

The Board is convinced that early specialisation is detrimental to the scientific method which it should be the aim of all types of higher education to foster, each in its own way. The student of the natural sciences, whose training in languages has been neglected at school, will be no less hampered than the student of the humane branches of knowledge who is ignorant of the main results of modern discovery in the natural world, while the man of affairs is equally in need of some measure of the double training. In secondary schools, therefore, aided by the Board, specialisation on the side of literature or of natural science to a degree which carries with it a higher rate of grant will not be allowed to commence before the third year of the course, but it may then look to science, to the classics, or to modern languages for the larger claim upon the time of the scholars. The Board believes that in a thorough linguistic and literary training for the student of modern languages Latin is a necessary factor, while as a means of introduction to the larger world of public affairs and international relations, or as an instrument of accurate expression for clear and logical thinking, no modern language can compare with French. The place of Greek will naturally be that of the third language in a classical curriculum, while German will frequently be the third language on the modern side, though in some schools Spanish, Italian, or another language may suitably be substituted for it. In the regulations of 1904–5 it was announced that other languages than English might by special permission of the Board be omitted in certain schools which provide an English course of a very thorough kind, occupying not less than 7½ hours a week, inclusive of the time given to geography and history, under a staff specially qualified to give an adequate linguistic and literary training in the national tongue.

The rule as to the commencing age for the course has been altered by doing away with reference to the average age of the scholars and substituting a minimum age for the ordinary course, and by attaching no fixed age to the special courses, which will, as a rule, be open only to those who have passed through two full years of the ordinary course.

The Board is also prepared to leave the question of the amount of fee to be charged in recognised schools to the school authorities in each case, provided the school is adequately staffed and equipped, and in a sound financial position, and provided it is clear that no injurious competition will arise with other efficient secondary schools in the same area. At the same time, it is important that parents and others should recognise that good education cannot be bought cheaply, and that two things must always be borne in mind if secondary schools are to serve the purpose which they have in view; the children sent there must be fit to profit by the education given, and the secondary school must correspond to its title, and must give an education higher in scope and character than that of an elementary school. If these two conditions are not satisfied the money of parents, ratepayers, and taxpayers alike will be wasted on the maintenance of a school which is a secondary school only in name.

For this reason the Board cannot regard with satisfaction the attempts sometimes made to combine an elementary and a secondary school under one headmaster. It will frequently be found that in such cases the teaching given is not much more than elementary, or that the time spent in the secondary department by the children is too short to enable them to get the advantages characteristic of a secondary school.

For the same reason the Board has impressed on local authorities the importance of giving to the headmaster of a secondary school, if not an initiative in certain matters, at any rate free access to the body, however constituted, to whom is entrusted the government of the school. The Board considers it to be most important that the views of the headmaster on questions of general policy and of the staff should be placed at the service, and receive the consideration, of any such body.

In another section of the report the results are given of the scheme arranged by the Board for the employment of foreign teachers in English secondary schools—to which frequent reference has been made in these columns. No fewer than fifty-eight English teachers, forty-one men and seventeen women, have been placed for the period of a year in French schools, and the first batch of five men went at the beginning of the present school year to Gymnasien in Prussia. The progress is naturally slower in this country, but eight French men teachers and six French women teachers have received appointments for a year in England, among them one at Harrow. A number of other headmasters and headmistresses have signified their intention of making appointments next year. English teachers have reported that they have greatly benefited by their period of study abroad under conditions that bring them into close touch with the life and thought of the people, and more than one headmaster in this country has expressed himself as satisfied that his pupils have much improved in their command of French as the result of these conversation classes. It is hoped to find appointments for German teachers in English schools next year, but the agreement with Prussia was concluded too late in the autumn to permit of more than one being placed in 1905.

The important report of the committee upon the proposed system of school certificates is referred to again in this report. The Board has received a number of criticisms and

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comments from the universities, professional bodies, local education authorities, and other persons to whom the proposals of the consultative committee were circulated, with a request for such suggestions and remarks as appeared desirable or necessary. It seems clear from a careful consideration of these comments, that in the opinion of their authors the proposals of the consultative committee are educationally sound and command a general approval.

HISTORY AND CURRENT EVENTS.

Do we realise that we are living in an era of revolution, and that the year 1905—which has just closed—may be regarded by the future historian as remarkable as the year 1848 is to us? Only a twelvemonth ago we were noting in these columns the arrival of a new State in the list of sovereign powers—the State of Panama. And since then, though quite strictly the kingdom of Norway cannot be said to have come into existence, yet it has started on an independent career, and has given Europe another sovereign and a new royal family. The new king has, to the pleasure of Norway, taken the name of Haakon, after the name of the last king who ruled over only Norway, and died in 1380. His marriage led to the union of Calmar, by which all three Scandinavian kingdoms were connected, until the religious revolution of the sixteenth century started Sweden on an independent career. Norway was connected with Denmark until the fall of Napoleon, when Sweden was allowed to annex Norway at the cost of Denmark to compensate her for the loss of Finland to Russia. And now, by one of the most peaceful revolutions the world has ever seen, free-trade Norway has dissolved that forcible union and has left protectionist Sweden, each to work out its own destiny.

"PEACEFUL" is the last word we should use in speaking of the revolution which is going on in Russia. What is really happening in that huge empire we cannot yet know. Our remarks thereupon must be tentative at the best. In some respects, one is tempted to liken it to the French Revolution of 1789–91. There is apparently the same paralysis of government, the same destruction of property, both in town and country, by bands of people who are demanding rights—the rights of the have-nots against those who have. There is the same intention on the part of the Sovereign Ruler to be the saviour of his people, the same powerlessness of that ruler against a reactionary court. But Russia is much larger than France, and there is, partly for that reason, an absence of that desire for unity which finally gave a single direction to the energies of new-born France and put an end to anarchy. One cannot anticipate a united Russia hurling herself on the nations of either Europe or Asia. The "left" are demanding a constituent assembly based on universal suffrage. But, if this were to come into existence, its parties would probably be more divided than those of the French convention.

SOUTH and west of Russia is Hungary, the land of the Magyars and of other nations. The age-long conflict between them and their dynastic rulers, who a century ago ceased to be nominal heads of the Holy Roman Empire that was Germany, is as intense just now as it was in the days of Kossuth and of Deák, whom our fathers knew so well. Is it by sympathy with Russian reformers or is it of their own motion that the Magyars are demanding universal suffrage as a cure for their chronic evils? Hungary used to be compelled to ally with Austria for fear of the then militant Turk. Turkey is now no longer militant—at least she is not dangerous north of the Danube. Christian States exist in all but full sovereignty between the Austro-Hungarian dominion and the ruler of Constantinople. And therefore it is that Hungary can afford to quarrel with Austria, almost to the point of breaking. Economically, at least, she wishes to be independent.

AND, lastly, to neglect the present phase of Macedonian politics, which we may regard as only a stage in the slow revolution by which Europe may eventually solve the Eastern Question, we turn to our own country, where the month of December has seen a revolution too. From causes which still appear somewhat obscure, the party which has conducted our affairs for ten years, and has been regarded, for some of its actions, with almost as much dislike, not to say hatred and indignation, by some amongst us, as the Russian autocracy, has ceased to rule, and a Liberal Cabinet has been formed which will dissolve Parliament and appeal to the country. We have called this a "revolution"—using the same word as we apply to events in Russia, Scandinavia, and Austria-Hungary. The Liberal papers have described it as "overthrow of the Government," &c. How differently these words sound when applied to the affairs of Great Britain and Ireland! Why? Is it because we are a little country? That we are therefore homogeneous? That we have fought out all this long ago in the seventeenth and eighteenth centuries?

ITEMS OF INTEREST.

GENERAL.

MR. AUGUSTINE BIRRELL, K.C., has been appointed to the office of President of the Board of Education, with a seat in the Cabinet; and Mr. Thomas Lough, M.P., has been appointed parliamentary secretary to the Board.

THE new regulations for the teaching of geography in secondary schools, issued recently by the Board of Education, formed the subject of a leading article in the *Morning Post* of November 23rd, in which the letter of the regulations was subjected to some captious criticism while the spirit which inspired them was disregarded. Well, such is the way of the world: no matter what is suggested or done, there are always persons ready to remark that something else would have been much better. In reply to the article, Mr. E. R. Wethey and Prof. L. W. Lyde, writing as practical teachers of geography in the classroom, condemned the attitude taken in the leader and expressed their appreciation of the intentions of the Board to encourage the study of geography in schools when scientific methods are followed. The point of view of the eloquent advocate of regional geography was described by Mr. H. J. Mackinder in an article contributed to our contemporary on December 5th. Unfortunately, Mr. Mackinder has misunderstood the opening sentence of the recent document, which states that the regulations for secondary schools prescribe "a course of general instruction, including geography." This sentence refers, of course, to the complete regulations covering all the work of a school, and not to the new regulations for geography just issued separately, so that Mr. Mackinder's censure of the Board for a supposed suggestion that geography should be combined with general knowledge has no point of application.

THE conclusion at which we have arrived, after considering the opinions of geographical experts expressed at various times on platforms, in papers, and in articles, is

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that as a rule they are altogether unable to understand that their subject is not the only one of importance in the school time-table. They propound schemes or publish syllabuses the elementary parts of which are hopelessly impracticable, while the remaining portions would form very appropriate subjects for the training of cartographers or journalists, but are out of place in the school. Just as a few years ago practical chemistry meant drill at test-tubing, as if every pupil was to become an analyst, so geography, according to those of its experts who are unfamiliar with modern tendencies, should be taught as if every pupil were intended for an explorer. In a sentence, geographers usually fail to recognise that a secondary school is not a technical institution, and because of their inability to distinguish between education and instruction their subject remains a multifarious mixture of details that can only be comprehended rightly by the elect among teachers and pupils.

THE touchstone of educational value should be applied to all departments of school work—whether literary or scientific. Secondary schools ought not to be concerned with the utilitarian sides of subjects (though expediency sometimes dictates to conviction in this matter), but with the influence upon the mind. Geography can certainly be made a valuable means of mental training, but only by sacrificing most of the material which specialists at present consider should be assimilated. The Board of Education desires the scientific method, which is now the aim of all practical work in schools, to be applied to geography, and we trust that the Board will persist in regarding as valuable only that kind of geographical teaching in which the pupil is an active partner, and is sharpening his own faculties of inquiry, imagination, and reasoning by work done individually in the class-room or laboratory, with occasional lessons in the open air. Every teacher should be able to guide this work into efficiency; and it is better for the corporate life of the school when the staff consists of Form masters than when specialist teachers take their subjects through the whole school. There is, of course, no objection to a teacher particularly interested in a subject being given the opportunity of exchanging periods now and then, but that is quite a different matter from teaching by specialists. Few teachers have anv special knowledge of geography, and there is no reason why they should have, if we understand the Board's regulations aright. Draw up a course in which the pupils do work for themselves—not memory work, but exercises of the nature of problems—and the Board is apparently prepared to approve it if a view of the whole world is taken in the four years' course.

GEOGRAPHERS ought to be glad that the Board desires their subject to be studied in schools by the methods followed in other sciences. Perhaps when these methods have been in operation in geographical teaching for a few years the subject will prove so valuable a factor of scientific training that it will be considered essential in an educational course, and we shall not hear the remark, now frequently made in scientific circles, that geography is not a science. Here we are not concerned with the claims of geography to a recognised position among the sciences, but we do say that the only way to justify a place in education is to follow the general direction indicated by the new regulations, and leave experts to elaborate their views for the benefit of technical and commercial schools.

IT is proposed to hold a vacation course of lectures and practical work in geography at the Oxford School of Geography, probably between August 8th and August 24th. The number of students will be limited, so far as regards practical work. Any communications should be addressed to the Director, School of Geography, Oxford.

THE London County Council has arranged to hold another conference of teachers on January 4th, 5th, and 6th, 1906, and there will be two meetings on each day at the Medical Examination Hall, Victoria Embankment, W.C. Addresses will be delivered at the first meeting by Colonel Fox, inspector of physical training, Board of Education, on "Physical Training in Elementary Schools," and by Mr. W. Langbridge on "Physical Exercises in the Classroom." The discussion will be opened by Mr. W. L. Clague. At the second meeting addresses will be delivered by Dr. Kerr on "The Position of Physical Exercises in the Infant Department of the Elementary School," by Mrs. Kimmins on "The Educational Value of Organised Play," and by Miss Kingston on "The Inter-relation of Drill and Organised Play." Addresses will be delivered at the third meeting by Mr. P. J. Hartog on "The Teaching of English," and by Mr. C. E. Rice on "The Teaching of English Literature." The discussion will be opened by Mr. F. S. Boas. At the fourth meeting Miss M. A. Howard will speak on "The Teaching of History," and Mr. H. Millward on "The History of London as Part of a History Scheme." Addresses will be delivered at the fifth meeting by Mr. Shadrach Hicks on "The Function of the Trade School," and by Mr. Percy Sykes on "The Training of Crippled Boys in Toy and Cabinet Making." Addresses will be given at the concluding meeting by Mr. J. L. Holland on "Trade Schools for Girls," by Mrs. Oakeshott on "The Trade Schools of Paris," and by Miss Smith on "An Experimental Day Trade School for Girls." No charge will be made for admission to the conference. Application for tickets of admission should be made to the Chief Inspector, Education Department of the London County Council, Victoria Embankment, W.C.

THE programme of the North of England Conference to be held on January 5th and 6th has been published. On January 5 the subjects for discussion in the morning session will be "Some Difficulties in the Administration of the Education Act, 1902," and "Local and Government Contributions to Education." Papers will be read by Canon Moore-Ede and Mr. Ernest Gray, M.P. In the afternoon of the same day the "Staffing of Primary Schools" will be considered, and a paper by Mr. A. R. Pickles will be read. On the same occasion the question of "The Pupil Teacher Element in Secondary Schools and in Pupil Teachers' Centres" will be discussed. The subject will be introduced in papers by Miss S. A. Gardiner and Mr. A. J. Arnold. At another meeting on the same afternoon "The Teaching of Elementary Mathematics" will form the subject of discussion, and a paper by Prof. R. A. Sampson will be read. On January 6th, in the morning, the "Regulations for Secondary and Higher Elementary Schools" will be introduced in papers by Messrs. W. Edwards and W. J. Abel. During the afternoon of this day, two meetings will consider other important questions. The "Organisation of Evening Classes" will be introduced in papers by Principal J. H. Reynolds and Mr. J. Crowther. "Physical Training" will be the subject of papers by Prof. Thomas Oliver and Captain H. Worsley-Gough. The "Simplification of Curriculum in Elementary Schools and Better Method of Testing Results" will be introduced to meetings by Canon Finch and Mr. G. T. Hyden. The morning meetings will be held in the Town Hall, and the afternoon meetings in Armstrong College, Newcastle-upon-Tyne.

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THE Board of Education has issued a circular dealing with the extraneous duties often required of an elementary school teacher. The circular points out that it is not uncommon to find, either in the advertisement of the vacancy or in subsequent correspondence with applicants for the post, an intimation that the teacher will be required to play the organ in church, or teach in the Sunday-school, or to perform some other duty unconnected with the work of the school. The Board reminds local education authorities and managers that any such requirement is invalid, and that its enforcement may involve a refusal by the Board to recognise the teacher, and, further, may even disentitle the school to further recognition as a public elementary school. Even in cases, the circular continues, where the discharge of extraneous duties is not made a condition of appointment, but is merely suggested to applicants as a means of increasing their income, it would be right that a local authority should satisfy themselves that educational qualifications have not been subordinated to a capacity and willingness on the part of the candidate to play the organ in church, to teach at a Sunday-school, or to undertake any other work not connected with the usual duties of a teacher of a public elementary school. We welcome this definite statement by the Board as likely to put an end to a practice that has caused much injustice and friction, and as tending to raise the status of elementary school teachers, especially in country districts.

THE Public Schools Science Masters' Association will meet for the annual conference on January 20th at Westminster School. The president for the year, Sir Oliver Lodge, will speak on the place of science in general education. Papers will be read upon the army examination and on the possibility of introducing a comprehensive syllabus of science-teaching within the time limits of a classical curriculum. After the conference there will be an exhibition of scientific apparatus by various makers in the new science buildings of Westminster School.

IT has been decided by the Senate of the University of London that a Higher Standard School-leaving Certificate shall be awarded in future to pupils who have pursued an approved course of study for a period of years at a school under inspection approved by the University, and who either (*a*) have passed at one and the same time the School examination (Matriculation standard) in accordance with the regulations for the Matriculation examination affecting the subjects to be taken, and also on Higher Standard papers in at least three subjects; or (*b*), having previously passed the general Matriculation examination or the School examination (Matriculation standard), or fulfilled one of the other tests of fitness to be admitted as a student for the time being prescribed by the Senate, have passed on Higher Standard papers in at least three subjects.

THE Modern Languages Holiday Courses Committee of the Teachers' Guild has issued its report on the courses at Tours, Honfleur, Neuwied, and Santander, held last summer, and has made its preliminary announcements for 1906. The attendance at the courses in 1905 was as follows:—At Tours, 42 students; at Honfleur, 52; at Neuwied, 34; and at Santander, 2. Last year, in the same centres, the numbers were 33, 38, 34, and 3 respectively. The growth of numbers in the French centres, notwithstanding the fact that some education committees no longer send so many students as formerly, is very encouraging to the committee. The special features of these courses are that they are limited to English-speaking persons, whose difficulties are largely special to such persons; that an experienced representative of the committee attends with the students; and that the students are distributed in very small groups among their hosts, so that they may have as full an opportunity as possible of learning conversationally the language of the country visited. The committee is satisfied that there is a steady and growing demand for holiday courses organised on this basis.

FROM the preliminary announcements for 1906 we learn that the Teachers' Guild has arranged courses, lasting from three to four weeks, to be held in August, in the centres where they were held in 1904 and 1905, viz.:—Tours and Honfleur, in France; Neuwied-am-Rhein, in Germany; and Santander, in Spain. The representatives of the English committee appointed to attend with the students will be:—At Tours, Mr. J. W. Longsdon; at Honfleur, Mr. E. Buck, Christ's Hospital, West Horsham; at Neuwied, Mr. S. de Ste. Croix, Christ's Hospital, West Horsham. Don Fresnedo de la Calzada and Mr. Sidney Beirne will, it is expected, be willing to act as local hon. representatives of the committee for the Spanish course. A preliminary circular giving more detailed particulars of arrangements will be issued shortly, and the Handbook, in which the final arrangements are indicated, will be published in May. The courses in each centre will be graduated to suit the relative proficiency of the students. To be able to derive profit from the courses, students should have a fair grammatical knowledge of the language of the country visited, and be able to read its literature with some facility.

SIR NORMAN LOCKYER delivered an address at the distribution of prizes to the students of the Borough Polytechnic on December 4. He said we are now at the beginning of a renaissance, just as our forefathers were seven or eight hundred years ago, when the outburst of the desire for learning put an end to the dark ages and gave an impetus to education which has never since declined. In those times Latin and Greek were the qualifications without which it was impossible for a man to earn a livelihood in the few professions open to him. The great demand, therefore, was for instruction in these languages. Times have now changed; the demand lies in other directions; but our aim must be to make education follow the lines laid down by the necessities of the times. We are in a world which has been entirely changed by the advent of modern science, modern nations, and modern industries, and it is obvious that if we are to do the best in education it must be in relation to those three great changes. In America, education is happily endowed by the foresight of men who set aside tracts of (then valueless) land for the benefit of schools and colleges; but in America the advantages of technical instruction are only given to those who have obtained a university 'degree. Since the commencement of the education movement in Japan, thirty years ago, that nation has become a world-power with whom we are proud to associate. We are led to the conclusion, Sir Norman Lockyer continued, that twenty or thirty years spent in Japanese fashion might set everything right. The sums spent on education in Germany and America considerably outweigh what is considered a sufficient amount in England; and we must realise that if learning is to progress in this country we shall have to pay for it.

IN the spring of last year, conferences on the teaching of English literature and composition were held, under the chairmanship of Prof. Elton, between secondary teachers in Liverpool and members of the University. These meet-

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ings are being continued. At a recent conference Prof. H. C. Wyld occupied the chair. Mr. Robert Jackson, of Waid Academy, Anstruther, and lecturer on phonetics at St. Andrews University, read a paper on "Phonetics in the School." He claimed that the thorough and experimental investigation of the formation of the sounds of the spoken language for its own sake is a means of discipline and culture. Teachers correlate their facts in the study of history, geography, natural science, and other subjects as well as they can with a view to illustrate the principles of cause and effect. It is only when they come to teach language—the instrument by which all symbols are learned and taught—that they throw scientific method aside. Mr. Jackson said that this is wrong, and that his experience has convinced him that phonetics can set it right, and that by and by, when it governs method from the infant school to the university, there will be such a revolution in the teaching of languages as is at present undreamed of. In reply to questions, Mr. Jackson said that it takes a little time at first to impart a knowledge of principles, but that afterwards phonetics is not an additional subject, but a method, which, by co-ordinating and simplifying the facts of language, actually saves time. He would not begin with phonetic spelling in the infant school. Reading ought at first to be entirely oral; pupils should be kept building single sounds into syllables and phrases until they can do so with perfect facility. Then they might be introduced to symbols, but the passages put into phonetic script should be those already known. Phonetic spelling being based on the principle "one sound, one symbol," pupils will be trained in seeing and hearing—senses that are not developed on the old method.

THE fifteenth annual report of the commercial education committee of the London Chamber of Commerce for the year ending December, 1904, has reached us. From the report we learn that the commercial education certificates of the Chamber are recognised by both employers and employees as credentials of proficiency, and are of the greatest importance to holders of them seeking positions in leading firms. The demand by employers for proofs of efficiency is becoming more apparent every year, and, in time, only those having evidence of their commercial qualifications will, probably, be held to be eligible for responsible positions in trade and commerce. While the demand for qualified employees continues to increase, it is gratifying to note the large number of students who are now receiving systematic instruction in day and evening schools in all parts of the United Kingdom. Not only is there a larger amount of commercial education in progress, but it is rapidly becoming more thorough and practical, and although the high standard and practical character of the examinations are maintained, the examiners' reports indicate more satisfactory results. There is, nevertheless, ample room for improved teaching and increased attention to modern foreign languages and those subjects which constitute the curriculum for a higher commercial education, suited to the needs of those destined to occupy the highest positions in commerce.

A SCHOOL of pedagogy has been inaugurated at the University of Paris. The scheme is the outcome of some resolutions adopted in 1902, when the reform of secondary education was under consideration; and the details, lately approved by the Minister of Public Instruction, have been elaborated by a commission of the council of the University. In accordance with recent regulations, incoming teachers at the Government secondary schools—known as *collèges* and *lycées*—will be required, from 1907 onwards, to hold the diploma in pedagogy which the University will then be prepared to grant. The entire course is to cover two years; in the first the theoretical, and in the second the practical, side of the teacher's equipment will be dealt with.

THE Government of Victoria has decided to abolish the pupil teacher system. As the result of the report submitted by an advisory board appointed to consider the question of the training of teachers, a day training college is to be established at Melbourne in the grounds of the University. A two years' course will be given. A "practising school" will be provided, a number of scholarships will be available, and facilities will be afforded both for technical instruction and for graduating at a university.

THE report of the conference on the salaries of assistant teachers in London secondary schools, called together by the London branch of the Incorporated Association of Assistant Masters, has now been published. The resolutions passed by the conference were printed in our issue for July last (Vol. VII., p. 267), and it is unnecessary to repeat them here. The report deserves the earnest attention of local education authorities and other governing bodies throughout the country. From it we learn that, out of 328 men whose salaries are given, no fewer than 63·4 per cent. are receiving between £100 and £175 a year, whilst only 17·4 per cent. are earning £200 a year or more. A large proportion of the masters are in middle or even in later life. Thus in one instance the average length of service in the school is twenty-one years, and the average salary £173 6s. 8d. In another the average number of years in the profession is sixteen, and the mean salary only £152 11s. 9d. About half the men whose salaries are given are graduates, many of them graduates in honours. The average pay of the 328 men whose salaries are given works out at £162 16s. 6d. The average number of years they have spent in the profession could not be exactly calculated from the data, but it certainly exceeds twelve. Had these masters been working in a service with a scale such as the resolutions of the conference suggest, the average salary would be about £270.

ANOTHER striking fact brought out in the report is the small number of posts which provide what may be called a "marrying competence." A schoolmaster must be considered rash who marries with the prospect of never obtaining a better income than £200 a year, and it has already been pointed out how few there are who have any such prospect. Men who marry usually have to eke out their slender salaries by doing other professional work. Investigations show that about 50 per cent. of the assistant masters in London schools are married, and that two-thirds of these married men find it necessary to take work outside their school hours; while of the bachelors only about 25 per cent. voluntarily add to their professional duties. As the report insists, if the system is not kept within strict limits, it may become injurious to the interests of the schools, and, while under present conditions teachers would resent strongly any attempt to curtail the liberty they enjoy of using their leisure hours to their own advantage, yet there are many who would welcome such an improvement in the wage paid them by their school as would enable them to devote their whole energy to the welfare of the school with which they are associated.

AT the last annual meeting of the Association of Technical Institutions, two papers were read on the co-operation of employers in the technical training of their apprentices. The subject was deemed important enough to be referred to the council of the association for inquiry and report.

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The report of the council only claims to be a first attempt to record in definite form the information at present available on the important question of the co-operation of employers and technical institutions in this country, with some typical examples of its working. The report analyses the answers given to a series of questions asked by the council on their form of inquiry under the following headings:—The trades to which the scheme of co-operation applies, the number of students affected by the scheme of co-operation, the payment of class fees, payment for books and material, and the association of employers with institutions. If regarded from the point of view of how few of the army of masters appear to interest themselves at all in the technical education of their workers, the report cannot be other than disappointing, especially in view of the different attitude of the employers in many parts of the Continent and of the United States. If looked at with the recognition of how recently technical instruction was introduced in this country, and in comparison with the attitude of employers ten years ago, the report is full of encouragement and the outlook hopeful.

THE Art Teachers' Guild has issued the first number of a new periodical, entitled *The Art Teachers' Guild Record.* The new publication, which is to be issued terminally, is designed to help to bind together those interested in the teaching of art in schools, and for the discussion of methods of art teaching.

INSURANCE of scholars against laboratory accidents is, says the *University Correspondent,* the latest development in German education. The Minister of Commerce and Industry has issued a recommendation that every student attending a technical school which belongs to or receives a subvention from the State should take out an accident insurance policy. The plan is to pay a premium of about 2s. 6d. a pupil annually for £50 in case of death, £800 in case of accident which leaves the student an invalid for life, and about 3s. 1d. a day for transitory inability to attend school on account of accident.

THE North-Eastern Railway Company is this winter continuing the arrangement—made two or three years ago—of offering on loan, for lecturing purposes, sets of lantern slides illustrating the holiday and historical centres through which the system runs. These slides are accompanied by readings on the subject, and are lent, free of charge, on application to the Chief Passenger Agent, York. Five lectures, too, are to be obtained at 6d. each, and sets of twenty-eight slides for each lecture can be loaned free. The titles of the lectures are:—(1) The Yorkshire Coast; (2) Tynedale and Northumberland Coast; (3) Teesdale and Lake District; (4) Wharfedale, Nidderdale, and Wensleydale; (5) York, Rievaulx, Richmond, Swaledale, and Durham. Teachers of geography would do well to avail themselves of this enterprising offer.

THE Rev. A. D. Perrott, assistant master at Cheltenham College, has been appointed headmaster of King Henry VIII. School, Coventry.

MR. T. P. NUNN and Miss M. Punnett have been appointed vice-principals of the London County Council Day Training College, Southampton Street.

AN examination for situations as Assistants of Customs is to be held in February. Candidates, who must be between eighteen and twenty-one on February 1st, will be examined in handwriting; arithmetic; English composition, including orthography; geography (general); digesting returns into summaries; copying manuscript (to test accuracy). Assistants of Customs serve a probationary period of twelve months, and will not be admitted to the establishment until they have been duly certified as qualified for the duties of their position. They receive salary commencing at £70 a year, rising by annual increments of £5 to £105; and then, after one year, subject to a favourable report on capacity and conduct, £110, by annual increments of £7 10s. to £220, until absorbed into the ranks of examining officers. At the examination in July, 1905, for sixty vacancies there were 802 candidates. The last day for sending in applications is January 25th.

THE Commissioners also announce an examination in March for admission to the R.N.E. College as probationary engineer cadets. Candidates must be not less than fourteen and a half, and not more than sixteen and a half, years of age on May 1st next. The latest date for making application is February 15th. The subjects are—arithmetic, algebra up to quadratics, and geometry, substance of Euclid I.–III.; English; geography; English history, Norman Conquest to the present time; French, including oral test; mechanics, with either physics or chemistry, including practical test; drawing, and one of the following:—additional mathematics, German, and Latin. The parent or guardian of each probationary cadet pays £75 per annum during the period of training—five years, which able and industrious engineer cadets can shorten to four. At the end of the fourth year they are offered such commissions as engineer officers as may be available. The full pay of engineer officers in the Navy ranges from 7s. 6d. a day as engineer sub-lieutenants to £3 a day as engineer rear-admirals.

THE Civil Service Commissioners have issued the following syllabus for geography, which will come into force for future open competitive examinations for clerkships in the Second Division of the Civil Service:—"The different regions of the earth—forest, grass, and desert—hot, cold, and temperate—and the kinds of human activity suited to each. The distribution of the more important plants, animals, and minerals, and their uses. Explanation of day and night, summer and winter. Latitude, longitude, and time. The circulation of water in all its forms: tides, treated without reference to the sun and moon; drift and stream currents; evaporation and condensation; clouds, rain, dew; rivers and springs; snow-fields and glaciers. Land-forms: mountains and tablelands, volcanoes, plains, valleys, &c. Types of drainage-areas. Maps: how to read a map, and how to make a map of a small district, contour lines, sections. The chief physical features of the earth's surfaces, and the position of the principal cities and countries, and of the great rivers, mountain-ranges, &c. The influence of natural features and physical conditions on the habits and occupations of man, and hence on the growth of towns. A somewhat detailed study of the geography of the British Isles, and a study in less detail of the Mediterranean basin, and of North America east of the Rocky Mountains. Such knowledge as is necessary to the understanding of English history will also be expected." A scheme, differing very slightly, is in force for the Army entrance examinations.

SCOTTISH.

THE autumn meeting of the Classical Association of Scotland was held in Glasgow University. Prof. Butcher, the vice-president, occupied the chair. The chairman said that his interest in the objects of their association had increased rather than diminished since he left Scotland.

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He is more than ever convinced from what he knows of the state of matters in England and the colonies that they are on the eve of a great revival of interest in the classics. The membership of the English association is now about 1,000, and there are fresh accessions every day. The membership is not confined to teachers, but includes a large element of the educated public who believe in the value of classics. There is no desire as an association, either in England or Scotland, to make war upon any of the new studies which modern life has rendered necessary, nor in any way to be exclusive. It is not maintained that classics are the only elements in a liberal education; but Dr. Butcher believes emphatically that in promoting classical learning a form of human culture which has still a great and increasing part to play in the modern world is being encouraged. The interest and value of it, far from being exhausted, are constantly increasing, and new possibilities are being opened up, partly through increased knowledge of the whole of antiquity, and partly through improved methods of teaching.

PROF. HARDIE, Edinburgh University, submitted the report of the committee on Latin pronunciation. This report states that the primary questions seem to be:—(i.) Whether an effort should be made to secure greater accuracy and uniformity in pronunciation; (ii.) what is the object aimed at in such a reform; (iii.) what are the things on which most stress should be laid. The committee considers that the first question is for the association to decide after hearing their suggestions. As to question two, the aim ought to be to pronounce Latin as the Romans pronounced it in the best days of their literature, or as approximately as possible. As to question three, any inquiry about pronunciation must be concerned with two things—(*a*) accent and quantity, and (*b*) the system of sounds—the sounds to be assigned to various letters. The first is most important for Scotland, the second for England. In Scotland, owing to the comparative neglect of verse compositions, accent and quantity are commonly inaccurate, and the feeling for rhythm seems to be not nearly so keen as south of the Tweed. On the other hand, the English system of Latin pronunciation is thoroughly unsound, and cuts students off from the scholars of the rest of Europe, whereas the Scottish system approximates closely to the continental standard. In the general discussion which followed the report, all the speakers supported the movement for uniformity, and a very general preference was shown for the Scottish system of sounds, modified in certain aspects, as opposed to the English. It was agreed to continue the committee on the subject, and that the report submitted should be circulated in all the chief schools and training colleges of Scotland, with a request that an expression of opinion should be forwarded to the secretary.

THE annual business meeting of the Sloyd Association of Scotland was held in the E. C. Training College, Edinburgh. Dr. Morgan presided over a large and representative attendance. The secretary to the Board of Examiners submitted a report on the examinations for teachers' certificates in educational woodwork during the past session. Thirty-three certificates were issued carrying the department's endorsement. Of these, ten were higher and twenty-three lower certificates. The examiners spoke in the highest terms of the quality of the work presented to them; but they pointed out that dexterity in the use of tools did not compensate for defects in theory, and that a good command of drawing was essential in all cases. Dr. Morgan, in the course of an informative address on "Manual Training in American Schools," gave particulars of the manual instruction which is so prominent a feature in the American vacation schools. These schools, which serve so useful a purpose in the poorer districts of the great cities, have a triple function—(i.) To remove children from the evil influences of the streets and give them healthful recreative instruction; (ii.) to give them a taste of country life by means of excursions; (iii.) to serve as experimental schools in which new educational ideas may be tested without demoralising the work of the regular schools.

THE new university committees for the training of teachers have now been constituted, and a beginning has been made with a movement that cannot fail to have far-reaching effects on the educational system of Scotland. Mr. Struthers, secretary to the Education Department, showed his appreciation of the importance of the occasion by being present at the opening meeting of each of the committees. In a short address to the members on the nature and scope of their duties, he said that it is the intention of the Department to submit to them for their consideration and report the regulations they have drawn up for the training of teachers under the new conditions. They have been drawn up with the greatest deliberation and after the most thorough investigation of all the circumstances, and he hopes they will meet with general approval. Any suggestions for their modification will receive careful consideration, though it should be clearly understood that the Secretary for Scotland must be solely responsible for the shape in which they are ultimately laid before Parliament.

PROF. CHRYSTAL, who has been elected interim-chairman of the training committee of Edinburgh University, speaking at the Royal Society banquet, said that a few days ago a modest beginning was made in what he believed would be a great revolution in the educational history of the country. The new scheme for the training of teachers will attain a magnitude which very few people perhaps anticipate. It will permeate the whole of the educational system; and Prof. Chrystal has no hesitation in predicting that—with the exception of the older teachers—in the course of ten years there will not be in any school in Scotland a teacher who has not been trained in one or other of the four committees established for the training of teachers. This new institution will have far-reaching effects, not only on the schools of Scotland, but upon the universities also.

THE increase in the number of higher-grade schools owing to the abolition of what were known as advanced departments has led to the formation of associations of secondary teachers in public schools in the north and east of Scotland. The parent branch in the west of Scotland, where higher-grade schools have been chiefly centred hitherto, has done excellent service in the cause of higher education, and it is hoped the new associations will follow its example by making the discussion of educational aims, ideals, and methods their chief business rather than questions of local or imperial administration.

THE local examinations in subjects of science and art, conducted by the Education Department, will begin this year on April 28th, 1906, and continue throughout May and June. These examinations are open to all students in continuation classes, and presentation is entirely voluntary. All students who wish to sit for the examinations should make application to the managers of the classes which they are attending. It will then rest with the managers to determine whether they will make application for an examination, and, if so, in what subjects. Examinations

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will, as a rule, be held in the second, third, and honours stages only. Applications for examination in the first stage of certain subjects of science, and in the first stage of design, will be considered in the case of candidates who can show that certificates in the first stage are required by the conditions of their employment or other special circumstances. Copies of the regulations for the examinations, and of the time-table of examinations, may be had on applying to the Education Department.

THE university court and senatus of St. Andrews University have resolved to celebrate, some time in July, 1906, the four hundredth anniversary of the birthday of George Buchanan. In asking for the co-operation of the other universities and various educational bodies, they state that the occurrence of so important an anniversary as that of this distinguished Scotsman and humanist should not be allowed to pass unmarked, and St. Andrews, where he was a student, and afterwards principal, seems the most suitable place for the celebration. Dr. J. Peddie Steele, of Florence, in view of the celebration, has generously offered a prize of one hundred guineas for the best essay on sixteenth-century humanism as illustrated by the life and work of George Buchanan. The competition is open to alumni of the four Scottish universities.

IRISH.

THROUGH the generosity of Sir Otto Jaffe and his brother, the equipment fund of Queen's College, Belfast, has been closed. Sir Donald Currie had offered £20,000 on condition that another £20,000 was raised before Christmas. Early in December £17,000 had been subscribed, when Sir Otto Jaffe, the chairman of the executive committee of the fund, completed the sum by a further subscription of £3,000, in addition to £1,000 which he had already contributed, his brother, John Jaffe, of Nice, having also previously given £1,090. University work in Belfast should be greatly benefited by this equipment of £40,000, which is all the more valuable as showing what can be done in Ireland by private effort.

THE Department of Agriculture and Technical Instruction will award in July, 1906, ten open scholarships and ten limited scholarships to assist domestic economy students training for teacherships to undertake the full course of instruction at the Irish Training School of Domestic Economy in Kildare Street. The scholarships will entitle the holders to free admission to the full course of training as teachers of domestic economy subjects. They will be awarded by competitive examination, to be held in Dublin, Belfast, Cork, and Galway, on July 3rd, 1906. The candidates must have been born in Ireland or resident there for three years, and be between nineteen and thirty on September 1st; they will be examined partly on paper and partly viva voce, in arithmetic (100 marks), English (100), Irish or French or German (100), and reading aloud (25). The standard will be that of the middle grade of the intermediate examinations. The limited scholarships are reserved for students already attending local technical schools or classes. These may be nominated as candidates for the examination by the local committee, which must also guarantee to pay ten guineas, being half the fees for the full two years' course of instruction. Names of candidates must be forwarded to the department before the end of April.

DR. EDWARD MAGENNIS has issued—as a leaflet—a summary of a paper on physical deterioration in the schoolroom, which he read in the Section of State Medicine at the annual meeting of the British Medical Association at Leicester last summer. During the past fifty years, Ireland has lost by emigration 4,000,000 of her people, 80 per cent. of whom have been between eighteen and thirty-five years of age; thus 3,000,000 of young, healthy adults have gone to enrich other lands. What is the result? Not only a decrease in the marriage-rate and birth-rate, but children less healthy both in body and in mind. And how are the latter looked after? There are 856,827 of them on the rolls of primary schools, many of whom have to walk considerable distances in fine or wet weather. If wet, there is no provision for drying their clothes; the schoolroom is bleak and cold, and possibly fireless; and the poor young children must sit and shiver for hours. As a rule, the schools are on unhealthy sites, and the sanitary arrangements are defective. The cure? "A medical inspection of schools should be imposed as a public duty on every school authority." Dr. Magennis's criticism is made only on primary schools, but the principle holds for all schools and places where teaching is done.

LAST term was characterised at Trinity College by a further development of the courses of lectures on education, having special reference to the teaching diploma. They have been specially arranged by Prof. Culverwell, the professor of education in the University of Dublin, and will be continued during next term. The full course of instruction will extend over two years, and is intended for those actually engaged in teaching. There were last term two series of lectures, one free to the public, consisting of a course of six on the Herbartian psychology of ideas, with educational applications. These have been very well attended. The other series has been limited to those who pay the fee of £1 1s. per term, and has dealt with the history of education. Teachers taking the full course will be granted a certificate, and will then, if otherwise eligible, be admitted to an examination for the diploma in education.

THE Hermione lectures at Alexandra College were last year most successful. Four lectures were delivered by Mr. George Clausen on the past schools of painting and their relation to those of the present day. The first lecture dealt with the earliest painters, from Fra Angelico to Raphael, the second with Titian, Rembrandt, and their successors, down to Reynolds and Gainsborough. The third was on Turner, Constable, and the pre-Raphaelites, and the last dealt with the modern French schools and Whistler and Watts.

THE Government has been appealed to by the Committee of Irish Catholic Laymen to appoint another educational commission. It is imperative, the committee urges, that, either by a Royal commission or by other effective means, an inquiry shall be directed to test how far the University of Dublin and its sole college, Trinity College, have provided, or are capable of providing, higher education for Irishmen, adapted to the needs and circumstances of every denomination. Trinity, it is pointed out, claims to be a national university, and to be wholly unsectarian; yet its governing body, the Board, consists exclusively of members of the Protestant Episcopalian Church, and insists on maiptaining a divinity school for the education of the Protestant Episcopalian clergy exclusively as an integral part of the college. The majority of Irish Catholics are debarred, on conscientious grounds, from entering Trinity, and, if they did enter, under existing conditions there is no prospect of their securing, within any reasonable time, adequate representation on the governing body.

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WELSH.

THE question has again been raised: Are the county intermediate schools too numerous? Colonel Pryce Jones, M.P., speaking at Llanidloes, said that the present system did not seem to him satisfactory. A secondary school should be a secondary school, and not merely a higher elementary one, nor yet a low-grade university college. He stated that the share of the county funds in Montgomeryshire in some county schools came to between £8 and £9 per scholar, and in others to between £13 and £16. There are 95 intermediate schools in Wales; the total number of pupils is 10,413, and the average for each school, therefore, is more than 109. Colonel Pryce Jones stated that in Germany there are 1,400 secondary schools educating 375,000 scholars, each school averaging about 268. In Montgomeryshire, he said, the average number of pupils in a county school was about 44.

IN one Welsh county, Denbighshire, the education authority has instructed the county architect to provide a school garden in all new rural schools. Further, in all plans for the enlargement of existing schools, the architect is to provide for the addition of a garden. The same authority intends to make provision in all new schools for cookery and laundry classes.

THE total number of pupils in all the county schools in Wales is equivalent to 5 per thousand of the population. In Merionethshire it is more than 10 per thousand. The total number of pupils is, as stated above, 10,413. There are in the Welsh county schools 74 headmasters and 21 headmistresses, 247 assistant masters and 243 assistant mistresses. This is an average of more than 17·8 pupils to a teacher.

SIR ALFRED THOMAS has declared in favour of putting education on a frankly secular basis. He claims that the State, as a State, has nothing to do with the teaching of religion in either churches or schools. This, of course, is not the position of Mr. Lloyd George, Mr. Herbert Lewis and others of the Welsh party, who hold that the Bible should be taught in the schools, if not, indeed, undenominational religion. The Calvinistic Methodists of N. Wales have, in opposition to Sir Alfred's view, passed a resolution that no system of public education should be adopted which does not include Bible teaching as a means for the religious and moral training of school children.

AT Barry, the Board of Education has determined to sanction the appointment of the revised staff, and to take over the administration of St. Helen's Roman Catholic School, which is at present under the Barry Education Committee. The education committee, it is stated, intend to test the action of the Board of Education in a court of law. With regard to Montgomeryshire, Lord Londonderry wrote to say that the Board of Education was prepared to maintain the voluntary schools, which the County Council decline to maintain, by withdrawing all powers from the education committee. The Defaulting Authorities Act meets the case. On the other hand, "the County Council abandons the elementary education of its area, and leaves the education of the children, even its own undenominational schools, to the precarious bounty of private persons." With these the Board of Education cannot deal, as such a position was not contemplated in the Defaulting Authorities Act.

PROF. KUNO MEYER, in addressing the Cymric Society at Bangor, has dwelt with severe criticism on university methods of teaching in British universities of Celtic and other subjects. Prof. Meyer pleads for an introduction of methods of research and scholarship in university teaching. It is a mistake, he thinks, to suppose that such methods should be reserved for advanced students. They ought to be practised from the very outset and at all stages.

A DEPUTATION has been sent to the Board of Education in reference to the recent recommendations of the Board that paper should be used instead of slates in the schools. The deputation stated that in the writing-slate trade alone they paid from £12,000 to £15,000 a year in wages. It was stated there was no demand from teachers for giving up slates, and that medical opinion was divided. In Germany there was a return to the slate, on the ground that the glare of white paper was injurious to eyesight. The insanitary argument was removed by the new method of slate-cleaning. Lord Londonderry said the department did not intend to put pressure on the local authorities. It was a matter of option for the authorities whether slates were used or not. The deputation, it is said, intend to send circulars to the local education authorities on the subject.

RECENT SCHOOL BOOKS AND APPARATUS.

English.

Scott's Ivanhoe. xxix.+471 pp. (Oxford University Press.) 2*s.*—The Oxford editions of several English poets are deservedly well known and highly appreciated. The Oxford University Press therefore proposes to supplement these volumes with a new series in prose as well as verse, and one of the first to be issued now lies before us. Nothing that is not commendatory can be said of this edition of Scott. It is not an educational volume, but prepared for the general reader. The price is low, the printing is good, the illustrations are excellent, and altogether this is a volume which ought to be snapped up eagerly.

Children of the Empire. Part II. By J. Finnemore. 1–146 pp. (Chambers.) 1*s.*—This book breaks new ground, and in a very pleasing way introduces children to their fellow-children thousands of miles away. The stories are not snippets, and a good deal of information is conveyed in them.

In the Reign of the Coyote. By K. Chandler. 1–160 pp. (Ginn.) 2*s.*—This is an admirable book for an imaginative child, but we would much rather have the child's "links" omitted, for the volume is a genuine contribution to folk-lore. The reign of the coyote and the eagle, the stories of the dead who "don't want to come back," the persistent story that man was made by the beasts, all this takes us to other times, other continents, and other races. There are close parallels in Burma to these curious relics of early North American Indian belief. The pictures are worthy of the text.

Macmillan's New Globe Readers. Book V. 1–264 pp. 1*s.* 6*d.*—An admirable selection of good matter written by well-known authors. If books like these can be used as examples of what may be found in the school library, they will serve their purpose well; but is the school library *demanded* by the Code? We complain loudly of children who do not like reading; will no gifted child arise and rend us?

For younger readers still, *Blackie's Model Reader*, 1–206 pp., Book III., 1*s.*, is beautifully illustrated and well arranged; the picture stories at the end are quite

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suggestive of a possible development in the art of making children think—a thing which (*pace* the books and teachers) they like doing.

The Masque or Pageant of English Trees and Flowers. The Australian Cousin, a Play for Girls. Both by M. F. Hutchinson. (Blackie.) 4*d.* each.—We do not know if this is the writer's first work; if so, it is very good. There are perhaps some objections to the Play, but the Masque has great possibilities.

Modern English Literature. By Edmund Gosse. 1–420 pp. New and revised edition. (Heinemann.) 7*s.* 6*d.*—No one may underrate Mr. Gosse's critical work. The present revised edition with its unmatched portraits is a treasure—for anyone who knows his English literature. Many of the illustrations are so good that they are worthy of frames. The price is moderate for such a book.

Historical Plays from Shakspeare. By A. T. Quiller-Couch. 1–368 pp. (Edward Arnold.) 6*s.*—This work, which does not in any way compete with the too famous book by Lamb, is admirably done. If anything is needed to send a boy to Shakespeare (and often a good deal is needed) this book should do it. The virtue of the editor or compiler lies in this, that Shakespeare's own words meet us on every page, in every paragraph. The many illustrations are all from well-known paintings.

Geography.

Atlas of Commercial Geography. By R. Ferguson Savage. 36 plates. (Johnston.) 5*s.* net.—This is an atlas which has several good points. First, it is excellently got up and beautifully printed; secondly, it makes much of physical geography, and its series of physical and geological maps are most useful as well as attractive; thirdly, it prints a "same-scale" British Isles on every plate except the world maps; and, fourthly, it is up-to-date enough to include the Tashkend-Orenburg railway and the two new provinces of Canada. Why it stopped short at the recent Japanese-Sakhalin arrangement is mysterious. Its defects, however, are many and glaring. The author seems to imagine that an ordinary map becomes a "commercial" map when it is sprinkled over with a sufficiency of labels. But the general effect is often most misleading. There is, for instance, a great lack of proportion. Spain, according to Mr. Savage, in the plate "South and Central Europe," has just as many products on its arid plateau as on the marginal folds or the irrigated huertas of the coast!—that is to say, "animal and vegetable products"; minerals have to be searched for on another map; presumably, there is no more room for labels. Again, cotton looks far more important in W. Africa than in Egypt, while palm oil in the same region appears of quite secondary importance. As a matter of fact, one of the main reasons why the cotton experiments of Sierra Leone and our other Guinea colonies do not fructify at the rate the experimenters would desire is that the native prefers his well-established and more lucrative trade of palm-oil gathering. There are many mistakes too, mostly of carelessness in the matter of proof-reading. But the results are confusing, to say the least of it. In one map the petroleum product of south-eastern Russia is correctly placed; in another it has gone altogether, and its place is usurped by "salt"; in a third it is there, but shifted south, well beyond the confines of Persia. This will, at all events, give the young inquirer "furiously to think." Here are some more "points" to beware of:—Venezuela produces "cocoa," but Ecuador "cacao"; France is still represented at the entrance to the Red Sea by Obock, for its supplanter Jibuti does not appear; the cotton of Ferghana, one of the main sources of future profit to the Orenburg-Tashkend railway, is not shown, though the supplies further south are there; the only product between Lakes Ontario and Winnipeg is, of all things, "maize"! Gold appears in British Guiana, but not in the right place; the British fisheries have the type-labels of herring, cod, mackerel, &c., but not one of the great banks (except just the edge of the Dogger) is as much as hinted at. There is, too, a great dearth of small sketch maps and insets—just the things one requires in an Atlas of Commercial Geography. To superimpose the railways of Europe on an ordinary political map of Europe is simply to create confusion. What one looks for is a sketch map of, say, the Orient Express route or of the Alpine tunnels. The purchaser of this atlas will do well, therefore, to "verify his references" occasionally.

Science and Technology.

An Introduction to Geology. By Dr. J. E. Marr, F.R.S. viii+229 pp. (Cambridge University Press.) 3*s.* net.—An explanation of the scope and methods of geology by a geologist of Dr. Marr's eminence is sure to command attention from all teachers of the subject. The brief text is illustrated by thirty-three illustrations, which are generally excellent in themselves, but too little information is given about them. For instance, the scale should have been given in Figs. 28 and 29, for at present the reader has no means of forming an estimate of the actual size of the objects represented. Similarly, in Fig. 6, the meagre description "a pot-hole" seems inadequate. The illustration appears to be a reproduction of a pot-hole in a ravine at Glenariff, Co. Antrim, and this fact, or a precise statement of the locality, might have been supplied. So, too, Figs. 9 and 10 are insufficiently described. Fig. 10 apparently represents glaciated rocks at Capel Curig, Carnarvonshire, and, if this surmise is correct, it might have been added to enable the reader to know where to seek the example given. In writing for beginners extreme precision is desirable. It would have been better to speak, on p. 47, of "expansion" and "contraction" rather than "lengthening" and "shortening," since cubical expansion is being considered. But these minor blemishes can be removed in the next edition. The teacher can recommend the volume with confidence.

(1) *Catalogue of Chemical Apparatus, Balances, and Graduated Instruments.* Fifth edition. 516 + xviii. pp. (Gallenkamp.) 2*s.* (2) *Illustrated and Descriptive Catalogue of Scientific Apparatus: Hydrostatics and Pneumatics. Barometers.* 56 pp. (Griffin.) (3) *Illustrated Catalogue of Optical Instruments.* 36 pp. (Tamblyn-Watts.)—(1) This handsome volume deals with general chemical and scientific apparatus. In compiling it, Messrs. A. Gallenkamp and Co., Ltd., have had in mind the special requirements of the session 1905–6. A copy of this catalogue should be in the reference library of every physical and chemical laboratory, for the simplicity and clearness of its arrangement, together with the excellence of its illustrations, will be of the greatest assistance to teachers in making out orders for new materials. (2) We have on previous occasions commented favourably on catalogues issued by Messrs. J. Griffin and Sons, Ltd., and the present list of apparatus—to illustrate the teaching of hydrostatics and pneumatics—maintains the reputation of this well-known house. (3) Teachers about to place orders for the supply of microscopes, spectroscopes, or telescopes should consult Mr. T. M. F. Tamblyn-Watts's list. This useful catalogue also contains some well-selected sets of apparatus for the teaching of nature-study and magnetism and electricity.

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First Stage Physiography (Section I). By R. W. Stewart. 256 pp. (Clive.) 2s.—This book is intended primarily for candidates preparing for the Board of Education Examination in First Stage Physiography (Section I). The treatment throughout is strictly elementary; but, in order to obtain sound and accurate exposition, the portions dealing with different subjects have been written by specialists under general editorship. The several chapters on mechanics and on chemistry are satisfactory, but the same cannot be said of the chapters on heat. On p. 117, details of an experimental method of showing the irregular expansion of water are given, and the method cannot possibly work satisfactorily; the fact is quite overlooked that the cubical expansion of glass at temperatures near to 4° C. is equal to, or even greater than, that of water. On p. 136 a diagram is given of a piece of apparatus which, if fitted up as shown, would certainly end in disaster.

Miscellaneous.

Elements of the Theory and Practice of Bookkeeping. By John Walmsley. xii.+252 pp. (Hodgson.) 3s. 6d.—The subject of bookkeeping is not usually included in the curriculum of secondary schools, and, when the great demands on the school time-table are considered, it is not easy to see how its introduction could be effected. In the preface to this volume an earnest and well-argued plea is put forward on behalf of this subject, and, while we hesitate to endorse it completely, we would gladly see a good deal of the commercial arithmetic that bulks so largely in the text-books set aside in favour of a course on the lines of the book before us. The exposition of the principles and practice of bookkeeping given in the volume under notice seems to us exceedingly clear, and goes far to justify the claims of the subject for a place in the training of youth. To those teachers who require a text-book we can heartily recommend Mr. Walmsley's book as likely to meet their needs in a thoroughly satisfactory manner.

A Primer of School Method. By T. F. G. Dexter and A. H. Garlick. 1–300 pp. (Longmans.) 2s. 6d.—If the authors will not be offended, we may hint that this book is a great improvement on the time-honoured "Psychology in the Schoolroom." It is eminently practical. It has chapters on discipline, method, reading, geography, nature-study, and other subjects. The chapters are full of matter and are thoroughly sensible. We should have liked a chapter given over to the faults of the teacher, for the child's faults take up far too great a space. More space might have been devoted to stammering and its cure—it is dismissed in eight lines; and in the notes on reading the pause is inadequately treated, considering its immense importance; two pages are considered enough for "the study of literature." But the book is full of suggestions; it has no dull pages, and where the teacher does not agree with it, it will set him thinking. And the price is only half-a-crown.

The Educative Process. By W. C. Bagley. 1–358 pp. (The Macmillan Co.) 5s.—This is a fine book, finely written. To begin with, it is clear as to the meaning of education. It is the subject, knowledge, reaction or habit which functions in a child's after life so that society will maximally profit (p. 60). And it appears that morality is its aim. One might suppose that morality is the aim of society, and we believe the writer thinks it is. Yet he does not scruple to blame Great Britain for neglecting its education to such an extent that it is behindhand in commercial and industrial supremacy. A little light is needed here. A good deal of the psychology in the book is physiology, and this is as it should be, for it really matters nothing at all that the teacher should be ignorant of theories of apperception if he knows that it is a good thing for children to wear loose clothes, to live in ventilated rooms, to use daily exercise, to keep clean *under the skin*, to avoid unclean talk and prurient meats, drinks, and literature, all of which are physiological matters mainly: if the teacher knows why it is a good thing and can tell his class and get his class to agree with him, happy is the school. The writer ends sadly, "In the light of what knowledge we now possess—and this is little enough—one is almost bound to adopt a pessimistic attitude toward the destiny of the race." A brief review, which cannot possibly do justice to this important volume, may perhaps do some teachers the service of sending them to the volume, if only that they may discover for themselves why the writer thinks that all around us is "a murky atmosphere of pessimism and doubt."

Oxford. Described by R. Peel and H. C. Minchin. With 100 illustrations in colours. 144 pp. (Methuen.) 6s.—For all who love Oxford, this book with its beautiful illustrations is a little treasure. No doubt, the memory of the grey walls and grey towers does not paint them in quite such vivid hues; but, with the exception of one picture (that of the Tower), the lights are such as may have been seen chiefly in autumn by any colour-loving and understanding eye. The letterpress is good, modern, chatty, and does not dig too deep into archæology.

The Education of Girls in Switzerland and Bavaria. By Isabel L. Rhys. 71 pp. (Blackie.) 1s. net.—This booklet is the report of the author's work as Gilchrist travelling student in 1902. It may be recommended cordially to students of education who are concerned with the methods of education adopted in girls' secondary schools in other countries. Mistresses in our high schools will find the essay suggestive and interesting.

Practical Housewifery. By C. F. Picton-Gadsden. viii.+191 pp. (Sonnenschein.) 2s. 6d.—We have in this volume numerous useful hints as to the best way of looking after a house. Cookery is not dealt with, and the information given is of the character of useful recipes for specific purposes. The book may be recommended as a handy work of reference in domestic difficulties.

What shall I tell the Children? By Dr. George V. Reichel. Second edition. xii.+224 pp. (Allenson.) 3s. 6d.—This collection of object-sermons, as the author calls them, should prove of assistance to schoolmasters called upon to occupy school pulpits. The idea of illustrating informal lessons on morality, and more formal discourses in the nature of a sermon, by objects, is worthy of attention. The fact that the book has reached a second edition proves its usefulness.

Boys and their Management in School. By H. Bompas Smith. viii.+119 pp. (Longmans.) 2s. 6d. net.—There is much advice from an experienced headmaster in this volume which should prove invaluable to young men fresh from the universities starting upon a career as schoolmasters. The teacher who has borne the heat and burden of the day will find little here which he has not discovered for himself. But there is a sweet reasonableness about Mr. Smith's style which will appeal to beginners touched with the pedagogic passion. We must, however, offer a protest against the author's constant use of the split infinitive; to say the least, it is very irritating.

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CORRESPONDENCE.

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New Methods of Modern Language Teaching.

It is not my intention to offer any general criticism of the article by Mr. G. H. Clarke in your last issue. It contains some wheat and some chaff; I have no leisure to perform the winnowing process, which a thoughtful reader can easily perform for himself. I pass over obvious inconsistencies, such as the inclusion among "reformers" of those who advocate "an amalgamation of the old and new methods," and wilful exaggerations, such as the statement that grammar is a "red rag to a new-methodist," and I propose to confine myself to the remarks about phonetics.

It seems to be a recognised means of attacking the efforts of the reformers to ascribe to all of them the vagaries of the extremist. I ask myself, Who desires that his pupils should "master the science of phonetics"? Surely no one who has given any study to the subject; for he must be aware how far he himself is from mastering it. Mr. Clarke recognises that a knowledge of phonetics is of great value to the teacher, but he adds that it is of little educational value to the schoolboy. It is a little difficult to follow Mr. Clarke. In what does its value to the teacher consist, if he does not utilise it in his dealings with the schoolboy? And if it helps the teacher to enable his pupil to produce the foreign sounds correctly, is it, then, of little value to the schoolboy? Mr. Clarke says that "owing to lack of ear, it is as much waste of time to explain phonetics to some boys as it is to try to teach certain boys music and singing." I do not quite know what Mr. Clarke means by the expression "to explain phonetics." If he wishes to imply by the sentence quoted that some pupils have more difficulty than others in producing the foreign sounds, I agree with him; but I believe that, even with these, better results will be obtained if they are taught the difference between the sounds of the mother tongue and those of the foreign language in a systematic fashion than if the teacher relies entirely on imitation. This I hope to have made clear in the articles on the study of speech sounds which you, gentlemen, have asked me to write for The School World, and I venture to refer to them those readers who are interested in phonetics.

I would conclude this letter by commenting on Mr. Clarke's statement that "Prussia seems to have turned against the use of phonetic symbols." I must confess that I am again not quite clear as to Mr. Clarke's meaning. If he is referring to the Prussian *Lehrpläne*, I do not know how he can justify his assertion. It is true that formerly the "Vermeidung von allgemeinen Aussprache-regeln" and the "Fernhaltung aller theoretischen Lautgesetze und der Lautschrift" were demanded; in the latest *Lehrpläne* (1901) these restrictions have been removed. The Prussian educational authorities no longer place difficulties in the way of teachers who wish to make use of phonetics; and I have not seen any evidence of a decline in the number of Prussian teachers who use the phonetic symbols in their classes.

It seems a pity that, in alluding to the regulations in force in Prussian schools, writers should still sometimes refer to the *Lehrpläne* of 1882 or 1891, instead of taking into account the changes effected in 1901, which, in the sections dealing with modern languages, show extensive concessions to the demands of the reformers.

Walter Rippmann.

With reference to the article in The School World on "New Methods of Modern Language Teaching," I may say, shortly, that it does not appear to me to touch the root of the question. Only a superficial view could confuse, at any rate, the *principles* of the new method with those of the "old French courses." A principle is one thing, a method—*i.e.*, the means used to work out a principle—is another. The principle of what is called the "new method" is sound and unassailable; the principle of the "old French courses" is thoroughly bad.

The results of these old courses (*vide* the reports on the Oxford local examinations in the same number of your magazine) are, and always will be, pitiful. I speak not as a theorist, but as a teacher, inspector, and examiner. Personally, I have always recognised the exaggerations and futilities to which the new principle, if mechanically and unintelligently applied, like every principle, in whatever subject, is liable. But this liability has nothing to do with the question. On the same ground the Christian religion, with its various heresies, is to be condemned. The claim made by "old method" teachers that they can, at any rate, teach grammar, not to mention what they are pleased to call "literature," is absurd. It is the very thing they have utterly failed to do, unless by teaching they mean the mechanical and unintelligent memorising of undigested facts, reluctantly learnt, speedily forgotten, and, in most cases, both intellectually and practically useless. The future of modern language teaching lies with the teachers—and headmasters. *Discant et doceant.*

Charles Copland Perry.

The Athenæum.

Un-uniformed Rifle Clubs.

I am meditating the formation of an (un-uniformed) rifle club at this school. I should be very glad if some of your readers would give me information and advice.

I should like advice on the range and rifle found most suitable where there is no range marked out by existing circumstances as suitable, and I am inclined to adopt some form of service rifle in preference to a miniature or air rifle. But the points on which I most need help are:—

(1) The amount of time weekly required by each boy to bring him up to a state of proper efficiency.

(2) The youngest age at which, with a service rifle or carbine, it is advisable to start training.

(3) The expense of starting and keeping up the club, including the expenses of the instructor.

(4) The regulations which must be adopted to ensure safety at the range, including the amount of supervision required.

I should welcome answers either through your columns or direct, but no doubt there are other headmasters who have in mind a similar project to whom some public discussion would be helpful.

B. D. Turner.

Loughborough Grammar School.

I gladly respond to the Editors' request for an answer to Mr. Turner's queries, based on our experience. For the last three years we have had a school rifle club, without uniform, now affiliated to the N.R.A., using a Morris tube range of 25 yards in the school playground. We use (*a*) for the elder boys the *ordinary service rifle*

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fitted with Morris tube, (*b*) for the younger, *Martini carbines* fitted in the same way. Replying to Mr. Turner's other questions *seriatim* :—

(1) After the five or six hours' drill in the manual exercises, we find that a quarter of an hour's practice a week is quite sufficient for each boy; enthusiasts practise more often.

(2) Much depends on size; as a rule, boys begin at fourteen.

(3) The initial expense was less than £20, including cost of Morris tube range, two service rifles and two Martini carbines from Government, and twenty D.P. Martinis for manual drill. The instructor costs 2s. 6d. an hour for supervision. Parents pay for this and for ammunition.

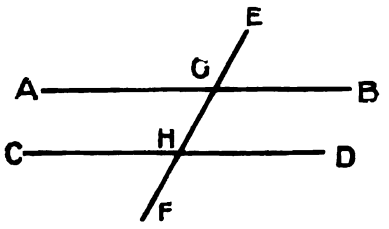
(4) A red flag is required by Government as a danger signal, and a qualified instructor must always be in attendance at the shooting. The range must be passed at the outset by the Government inspector, who also pays an annual visit.

WM. HAIGHTON CHAPPEL.

King's School, Worcester.

Parallel Straight Lines.

THE following is a method of proving the theorem that if a straight line meet two other straight lines, making the alternate angles equal, then the lines are parallel, which I consider easier to grasp than that given in Godfrey and Siddons's "Elementary Geometry"; moreover, the theorem concerning "corresponding angles" is proved simultaneously.



Data: $\angle AGH = \angle GHD$.

To prove $AB \parallel$ to CD.

Suppose the part $BGHD$ to be cut out and then moved up along the line EF, keeping GH on the line EF.

Eventually H will arrive at G.

Now since $\angle AGH = \angle EGB$, it is clear that HD will fall upon CB, $\because \angle AGH = \angle GHD$.

Hence, since the direction of HD has not changed during the motion, it follows that CD is parallel to AB. Q.E.D.

"Vertically opposite angles" are thus a particular case of alternate angles when the parallel lines are coincident.

Cairo. ERNEST S. THOMAS.

MR. THOMAS'S interesting proof is doubtless easier than ours; but, unhappily, everything depends upon that dangerous word *direction*. We decided deliberately not to define parallels as "straight lines in the same direction"; and I believe I am right in saying that experts regard the word "direction" with great suspicion. Many charming proofs can be given if only one is prepared to slur over that little obscurity.

It is quite arguable that such precautions are needless, that "direction" proofs are easy and quite sound enough for schoolboys, and that they could not understand the fallacy were it pointed out to them. Very likely this is the correct point of view, but it was necessary to produce a text-book sound enough to reconcile academic critics to the revolution; and, after all, the schoolboy has come off pretty well in the change.

Osborne. CHARLES GODFREY.

School Boarding-houses.

THE little paper on "School Boarding-houses" by "A Headmaster" in December, 1905, issue has interested us very much. Neither my husband nor myself was "bred to the business" of "keeping a healthy and economical hotel," but we seem to have succeeded in solving most of the intricacies thereof, with one important exception: we have not yet succeeded in earning a profit commensurate with the trouble involved in running our little boarding-house smoothly and comfortably. The commissariat department is under my control, and I, too, find that it is quite possible to feed boys at a sum under 10s. per head weekly, to the entire satisfaction of the boys' parents, and, I believe, of the boys themselves.

In our house there are twenty-five boys, whose fees average only £38 per head. At 10s. per head weekly (an outside figure, I admit) the food-bills alone are £475. Then must be taken into account the salary of the matron, the wages of the gardener (we are obliged to keep a gardener) and of five maidservants, making a total of £152. Add to this £80 for laundry, £60 for coal and gas, and £100 for breakages, wear and tear, and the hundred and one necessary incidentals always cropping up in a large household, and our total is brought up to £867, which, subtracted from the receipts, £950, leaves a balance of £83. Out of this and my husband's salary, which is, of course, not munificent, we have to keep house for the remaining fourteen weeks of the year, dress, pay the salary of the children's nurse, pay the doctor's bill, buy books, newspapers, stationery, stamps (no small item, this last), and save all we can for the children's education and our own old age. I think it is quite evident that all boarding-house masters do not deserve the epithets "avaricious," "unscrupulous," so ungenerously hurled at them by newspaper correspondents.

To go back to the beginning. What ought we to do to earn the substantial profit which seems to me to be the assistant master's sole inducement to "keep a juvenile hotel"? We cannot reconcile it with our consciences to dock the boarders of a meal a day (they have four) or to buy inferior meat and groceries; and to part with my excellent, but highly-paid, cook would simply precipitate us into a turmoil worse than that of a general election.

Where can I economise?

A PERPLEXED BOARDING-HOUSE MASTER'S WIFE.

Method of Teaching the Atomic Theory.

IN "Hints for Teachers from Examiners' Reports," in the December issue of THE SCHOOL WORLD, can be found the following:—"Comparatively few candidates have a clear conception of the arguments in favour of the atomic theory." In spite of the diseased state of the atoms, most teachers of chemistry would consider the atomic theory of such supreme importance that its introduction into an elementary course would be unquestioned. As a teacher of boys and girls who are not, on the average, more than sixteen years of age, I have often been much exercised in mind as to the best method of, and the best time for, bringing the atomic theory before them; and, even after the step has been taken, there still remains the further question: How much use are you going to make of the theory? Ostwald advises that "the forms of expression of the

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atomic hypothesis [be used] as sparingly as ever the present usage of language will permit." The advice seems good, but somewhat difficult to follow.

I think there can be no doubt that teachers find the subject difficult to approach, and that boys and girls find it difficult to grasp. The usual way of attacking the subject is, shortly, as follows:—A number of experiments are performed to show that elements combine in fixed, constant proportions to produce compounds; *e.g.*, the composition of the oxide of magnesium, formed by burning magnesium in air, the composition of the oxides of tin, copper, iron, formed by oxidation of the metals with nitric acid, can be determined by the pupils, while the composition of water can also be determined with the aid of the teacher. These experiments will afford data from which the combining weights of the elements in question can be deduced.

As soon as the idea of a combining weight has been fixed, it should be pointed out that some compounds are produced by two elements entering into combination in the proportion of one combining weight of each element, others by two elements combining in the proportion of one combining weight of one element to two of another, others in the proportion two to three; all these cases could be illustrated from the experimental work. This would really give us the laws of constant and multiple proportions.

The atomic theory could now be introduced as a pictorial representation of these combinations. The easiest method to adopt is something of this sort: imagine that each element is composed of small packets (that all the packets of any one element are exactly alike), that the weight of each packet is the combining weight in grams; then, to obtain a compound, you require to take of these packets, from at least two elements, in the proportions one to one, one to two, two to three, as the case may be. These packets are the atoms. This seems to me, shortly, the best way of arriving at a notion of the theory.

Even when the theory has been approached in this way, and apparently thoroughly understood, there are many dangers.

It is most important that the hypothetical nature of the theory should be particularly impressed upon the minds of the children. Boys and girls have such a good imagination that in many cases they lose sight altogether of the fact that the atoms are not realities, and use the theory to "explain" chemical reactions in a way which is weird. On this account it always seems to me inadvisable to talk of two atoms of hydrogen combining with one of oxygen to give water; it is much better to speak always of two parts by weight of hydrogen combining with sixteen parts by weight of oxygen—to keep the weight aspect in the foreground, the atom in the background. It should always be kept in mind that the theory is only a crutch to help our lame understanding; other theories would "explain" the reactions just as well, but the atomic theory seems to us the easiest to use. The merely dogmatic use of the theory is always unjustifiable.

Even after a very clear exposition, the non-use of the theory by young boys and girls is excusable; all chemical reactions with which we are acquainted take place in the gross, yet the theory considers these reactions as taking place between particles so extremely minute that they cannot be appreciated by our senses—which is, to say the least, a little confusing.

Another difficulty which confronts the teacher is the text-book difficulty. Most elementary text-books treat the theory badly; in many of them it is made a scientific dogma. The statement is made that matter is composed of atoms, and, as a matter of course, no proof of this can be given; the pupil is asked to take something, which cannot be proved, "on faith."

I wonder, too, whether some of the very bad answers in the recent examinations may not have been due to difficulty in understanding the question?—sometimes examiners do put the question very badly. A question on the atomic theory should, in my opinion, be a leading question, one which would show the examinee exactly what answer was expected. A discussion as to the best time for introducing the atomic theory into an elementary course, and the best method of doing so, might be of some considerable service to a number of teachers.

Bridgend. W. A. WHITE.

The Operation 7÷3.

Is the operation 7÷3 to be read "Seven divided by three" or "Three divided into seven"?

I venture to put forward the following propositions:—

(1) The former phrase is correct.

(2) The latter phrase is almost always used by boys entering public schools.

(3) The matter is important.

In the case of proposition (3) a proof will be expected.

Set an average class, aged thirteen, this sum:—"A football team of 15 have to pay altogether 17s. for their tickets: what is the fare?" I shall be surprised if the majority do not say 15/17 shillings.

I am prepared to make the assertion that the majority of our boys *do not understand the meaning of division*, and that this is at the root of much of the deplorable work in arithmetic which all our reformed methods seem to have left untouched.

Is anything more likely to produce this state of things than the use of the expression "divided into"?

Just consider the confusion of mind engendered by the concurrence of these two phrases:—

"Three divided into seven" (meaning 7÷3).

"Three divided into seven parts."

I honestly believe that I am not exaggerating, and I make an appeal for the suppression of the noxious phrase.

Osborne. CHARLES GODFREY.

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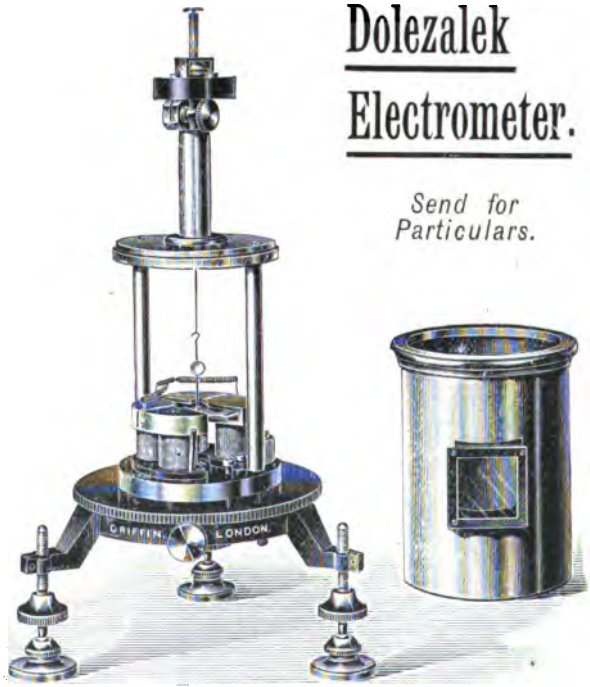

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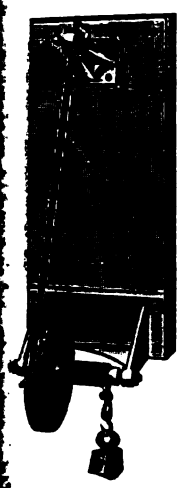

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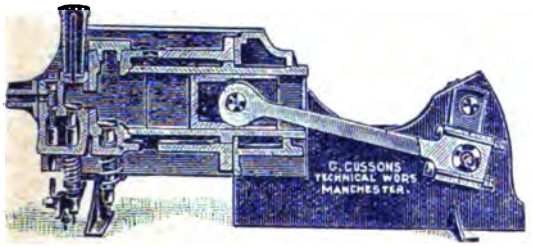

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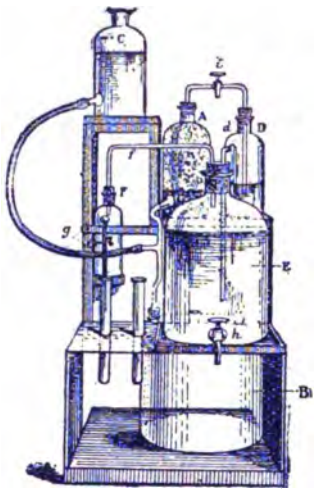

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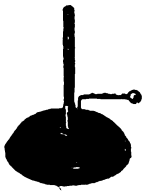

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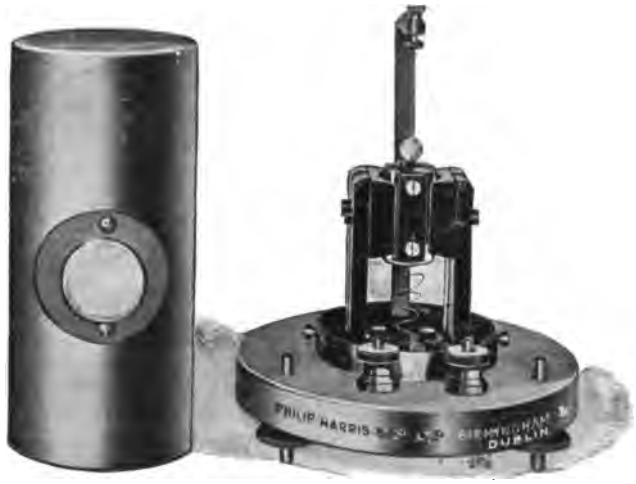

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To face first matter.

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THE USE AND ABUSE OF PARAPHRASE.

By J. H. FOWLER, M.A.
Clifton College.

TO many of those who care for English literature, the very name of paraphrase is *anathema maranatha*. Nor is their feeling wholly without reason. It would indeed be difficult to find words of censure too strong for the art of paraphrase as it has often been practised, and even prescribed in text-books. If literature is "the best that has been thought in the world expressed in the best way," any different way in which we express a noble passage of literature must be an inferior way. To teach paraphrase, then, it may be said not altogether unfairly, is to teach one's pupils to take good literature and turn it into something that is not literature at all. That is the literary objection. But there is a philosophical objection that goes still more deeply to the root of the matter, and seems still more fatal. The very conception of paraphrase, the philosopher will remind us, involves a false view of the relation between thought and its expression, matter and manner, things and words. You cannot express a thought in two different ways. In modifying the expression you inevitably alter the thought itself.

These two objections are not mere quibbles. No one who does not fully feel their force can have a true understanding of what literature is. And no one who does not fully feel their force, I should like to add, is a safe teacher of the art of paraphrase.

And yet that art, if taught intelligently and judiciously, seems to me so invaluable a mental training and so helpful to the appreciation of literature that I am persuaded the Board of Education and the matriculation authorities of the London University are entirely right in encouraging its practice. To discontinue paraphrase because, like anything else, it may be taught badly, and even mischievously, would be a policy of weakness. It is right to be aware of the dangers that attend upon the misuse of the practice, and to direct attention to them. But we cannot afford to dispense with a valuable instrument of education until we have found something that can really take its place. All the dangers can, I believe, be avoided by a teacher who is aware of them, and cares sufficiently about literature to take the trouble to avoid them.

For what are the dangers? These two, I think, mainly. First, a pupil may be led to imagine there are half a dozen different ways of expressing any thought, and that it is a matter of indifference which of them we choose: or that we improve a simple thought if we dress it up in longer and grander words; and that it is actually possible to "improve" in this way the passage of literature that is set for paraphrase. Secondly, a piece of literature may lose its charm in the minds of teacher and pupil through the prosaic associations of a mere language exercise.

As for the first of these dangers, it is entirely the fault of the teacher if it becomes a real one. My contention is that the art of paraphrase may, and should be, used to teach, not that the choice of expression is indifferent, but that it is all-important. It is only when a pupil has tried to express a writer's thoughts in other words that he can, if at all, learn to see why the words actually chosen by the writer answered his purpose better than any other words, and why he arranged them in a particular order. Rightly taught, paraphrase is not the negation of style, but the best of all lessons in style. As to the second danger, it is a serious one, but it applies almost equally to any teaching of literature, or to the teaching of the Bible, in school. I do not think anyone who is not alive to it can be a good teacher of literature. But I have faith that no man who cares very deeply for literature himself will make it hateful to his class.

The uses of paraphrase I claim to be these. First, it teaches us, as nothing else can, the flexible nature of language. It is true that there are no synonyms, or very few. It is equally true that we all, or nearly all, shamefully limit our vocabulary and deny ourselves the riches of our native tongue. Our conversation and our letters, to say nothing of our essays and speeches, would gain enormously from a more vivid realisation of the immense choice of words at our disposal. Secondly, the practice of paraphrase supplies a

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part of the mental discipline which is claimed with justice as the special advantage of a training in Latin and Greek composition. The art of paraphrase, rightly practised, is almost identical with the first stage in the process of classical composition. For in it we attempt to put a writer's meaning into the simplest possible form, to reduce it to its lowest terms. Half of the value of Latin and Greek composition is contained in this act of analysis. Thirdly, paraphrase supplies the best, perhaps the only, test of our comprehension of the meaning of a difficult passage. If it be objected that poetry cannot be expressed in prose, and that to attempt a prose paraphrase of a poem is an act of profanation, we may readily admit that the most precious elements of poetry defy translation and analysis, and still maintain that paraphrase is a valuable literary exercise. It is not easy to understand on what principle those who concede value to a translation of a classical poem into English prose can deny the reasonableness of attempting to make clearer by a prose paraphrase the meaning of a difficult English poem. But anyone who is troubled by the cavils of objectors that profess to be speaking in the interests of literature may derive comfort from the practice of so accomplished a student and so devout an admirer of the English poets as Prof. A. C. Bradley. In his commentary on "In Memoriam," Prof. Bradley has often resorted to paraphrase, and to this book and to Mr. Tozer's admirable edition of "Childe Harold" I would refer the reader for some excellent models of this much misunderstood and unfairly depreciated art.

The difference of opinion about the literary value of paraphrase is to be understood if we recognise the existence of two different temperaments among those who genuinely care for literature. There are some whose love of literature is a strong impression and a strong emotion, but whose instinct is to regard any attempt at analysis as the dissection of a living body. There are others who feel that to understand as fully as possible is to love most truly. I have little doubt that the view of these latter is right in the main; for the greatest literature deserves something more than vague admiration; the more searching the analysis to which we subject it, the profounder are the beauties that it reveals. Yet the teacher of literature should never forget that he does irreparable harm if his scientific zeal hurts or destroys in any pupil a real love of poetry. It may not be superfluous, then, to insert at this point the caution that such passages of the noblest poetry or prose as by their pathetic or inspiring character, or by their haunting beauty, excite deep feeling in the reader, are not fit subjects for paraphrase. They are holy ground; let the examiner beware how he profanes it.

What kinds of passages, I may be asked, are specially suitable for this exercise? I will mention some that I think appropriate, and give one or two specimens of my own practice: it seems only fair to do this, though I am fully conscious that I am thereby giving hostages to those who disapprove of the exercise altogether. Prose of the Elizabethan age or the seventeenth century will supply endless passages of great variety and of different degrees of difficulty. It is so remote in structure and vocabulary from twentieth-century prose that it furnishes a genuine exercise in translation. A good teacher will, of course, help his pupils to see its beauties, and will not let them entertain the impression that they are mending it by their versions. Secondly, the prose of the eighteenth century, though much nearer in structure to our own, is still sufficiently different —especially in its greater use of Latinisms—to furnish good exercises. Thirdly, though the correction of other writers' faults should be very sparingly used, as tending to encourage intellectual conceit, a pupil may learn a great deal by trying his hand occasionally at the simplification of a passage that is obviously verbose, redundant, excessively ornamented, clumsily involved, or ungrammatical. For the material for such exercises we need not go further, alas! than our morning newspaper; but some readers may like to be reminded of the appendix to Abbott's "How to Write Clearly," in which passages from Alison's "History" are printed in parallel columns with amended and simplified versions. Fourthly, speeches from Shakespeare and "Paradise Lost," characters from Dryden, didactic or descriptive passages from Pope, Thomson, and Cowper, furnish excellent subjects. I have already referred to Prof. Bradley's commentary on "In Memoriam" and Mr. Tozer's "Childe Harold" as containing helpful models.

Some in their discourse desire rather commendation of wit, in being able to hold all arguments, than of judgment, in discerning what is true; as if it were a praise to know what might be said and not what should be thought. Some have certain commonplaces and themes, wherein they are good, and want variety; which kind of poverty is for the most part tedious, and, when it is once perceived, ridiculous. The honourablest part of the talk is to give the occasion, and again to moderate and pass to somewhat else, for then a man leads the dance.—*Bacon, Essay "Of Discourse."*

PARAPHRASE.—In conversation some desire rather to be commended for cleverness, because of their ability to maintain any argument, than for judgment, because they can discern what is true; whereas the really creditable thing is to know what we ought to think, not what it is possible to say on one side or another. Some people have certain stock subjects in which they excel, but they are lacking in variety: their want of range makes them tedious talkers, and even, when once you have observed their limitations, ridiculous. The most distinguished part in conversation belongs to him who introduces the subject, and again regulates or directs the conversation by passing on to something else; such a man may be said to lead the dance.

If to the city sped—what waits him there?
To see profusion that he must not share;
To see ten thousand baneful arts combined
To pamper luxury, and thin mankind;
To see each joy the sons of pleasure know,
Extorted from his fellow-creature's woe;

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Here, while the courtier glitters in brocade,
There, the pale artist plies the sickly trade;
Here, while the proud their long-drawn pomps display,
There, the black gibbet glooms beside the way.
Goldsmith, "Deserted Village."

PARAPHRASE.—If the poor man hastens to the city, what awaits him there? He sees wasteful abundance, but he is denied all share in it. In the city, ten thousand harmful arts and trades combine to pamper the luxurious at the expense of the rest. Every delight that the devotees of pleasure experience is obtained at the cost of misery to their fellow-creatures. That the courtier may glitter in embroidered silks the pale artisan works at a trade that is ruinous to health; and in contrast with the long processions and festivals of the proud is the sight of the poor criminal swinging on the black gallows that rises gloomily beside the street.

But quiet to quick bosoms is a hell,
And *there* hath been thy bane; there is a fire
And motion of the soul which will not dwell
In its own narrow being, but aspire
Beyond the fitting medium of desire;
And, but once kindled, quenchless evermore,
Preys upon high adventure, nor can tire
Of aught but rest; a fever at the core,
Fatal to him who bears, to all who ever bore.
Byron, "Childe Harold."

PARAPHRASE.—But repose to eager hearts is an intense torture, and this it was that proved Napoleon's ruin. In some souls there is a fiery activity that will not let them rest within the narrow limits fixed for them, but makes them aspire to heights beyond what they should seek to reach; and when this fire is once kindled it can never be quenched, but feeds upon lofty enterprises and can only be wearied by rest; it is a fever at the heart, fatal to all who feel, as to all that have ever felt it.

HOURS OF SLEEP AT PUBLIC SCHOOLS.

By ALFRED EARL, M.A.
Tonbridge School.

AN important letter dealing with the need of longer hours of sleep at public schools appeared in the *Times* of December 21st last. To this short and businesslike letter were subscribed the names of fifteen men eminent and authoritative in the world of medicine and physiology. Names more representative than those appearing could scarcely have been grouped together, and they direct, with something in the nature of a command, the serious attention of parents and schoolmasters to the cause which they have taken up. The proposition that long rest is needed for recuperation after exercise of muscle and nerve, and still longer rest for boys who not only need to recuperate, but also to assimilate and construct, during the course of that miracle of nature called growth, forms the gist of their letter, and its importance must be admitted unhesitatingly. To enforce that proposition on a public not usually well informed as to the Palace of Aladdin in which they live is a charitable deed. It is an addition to that load of indebtedness placed upon the lay world by the priests of healing, and surely no man can be more sensible of the obligation to those who add so generously to their professional skill a personal solicitude which transcends so scornfully the measures and considerations of the market-place than the schoolmaster with his ample parenthood, no less but rather more onerous for being vicarious. Let that pass as a proposition equally obvious. The schoolmaster and the doctor are natural allies. They should supplement, strengthen, and instruct each other.

This letter has called forth in the columns of the *Times* a number of replies. It is questionable whether the public press is a satisfactory medium for the discussion of such subjects. It does not always lend itself to an academic sobriety of view, and there is, perhaps, no region—save that maze of ineffectual finesse, the political arena—which is more obscured by half-truths and catchwords than is the promised land of education—never, alas! seen but from a distance. Even then could we schoolmasters but see it steadily and see it whole! And this pious hope leads me to the one point in criticism which I wish to make upon the recommendation embodied in the letter. I feel assured that the readers of THE SCHOOL WORLD will agree with me that the subject presents difficulties which are more apparent to the pedagogue than to the layman. These pages appeal and refer, in the main, to a more responsible body of opinion than that which expresses itself in the columns of the *Times*. Unfortunately, there is no subject more likely to encourage levity of statement and the use of certain wise saws than that of sleep. Has not one letter already appeared, with seeming seriousness, to recommend an afternoon nap! As if . . . . (but I dare not complete the sentence). And the combination of sleep with schoolmasters is, of course, irresistibly funny.

But, in all seriousness, this is one of those topics, occurring periodically in the course of scholastic discussion, which can never be taken apart from its context. School life is an epitome of the larger life, no less complex and even more concentrated and potent in its issues. Touch one chord of action, and the echoes return from far-off possibilities. Let one more buttress be added to that building not made with hands, and the Architect calls for an added richness to the whole. Strenuousness and sleep in their turn have been called for with the same degrees of violence and with little difference of time. But though neither more sleep nor more passionate pursuit can be the salvation of all and sundry, and though each is eminently desirable, and the one may produce the other, yet resource and courage and wholesomeness of mind and body—an equipment for a struggle in which a disciplined mastery of the senses, as well as of the intellect—must be employed; capacity to create and construct, as regards the work of the world; capacity to fight and overcome, not to avoid, but to annul, as regards the evil of the world; capacity to be blithely militant as regards the

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faith in the world—these are some of the ideals, trite enough, of school life, and they must all be present in the mind when change is under consideration. Can we have all together, so much the better. But it is a difficult world—unstable in equilibrium and intensely provocative of compromise.

Is it not possible, again, that in this world, as in social relations, instincts predominate because they are expressions of, and glimpses into, the operation of ultra-human laws, instances of larger growths and more uncontrollable movements than we can observe directly? We must not be deluded by this or that panacea into a mechanical regularity. The modern outlook is, unfortunately, towards a registered, definitive character, expecting the resultant achievement in terms of component factors, whereas no process of integration can explain why two sounds make "not a third sound but a star." No tabulated record can ever be made of the constants which connect promise with performance, or even opportunity with success. It will be a dull world when humanity is standardised like engineering material. Is it possible that at the last day the balance shall be struck with quantitative accuracy and salvation depend upon the reading of a curve of fatigue? Is there no hope to escape the levelling tendency of which we see nowadays so many signs, the conformity to a type, wholesome enough, it is true, but with daily fading features, each individual surrendering his soul to current convention? In some respects, however, human nature is, fortunately, irrepressible. We all live up to our material and moral income, and some of us beyond it. There is consolation in the thought that the enrichment of the world has come about usually through a complete disregard of anything like a proper spiritual book-keeping. Most of the big people have died young, in fact or essence, while most of my young friends seem shaping for a ripe old age.

Here, I think, we may pause for a moment to consider that significant tendency—indeed, it is almost an unfailing sign of vigorous and healthy youth to burn the candle at both ends—to live up to the physiological income and beyond it. Here, too, I may express a wish that the outlook of the medical world were a little less physiological and somewhat more bionomic, and, at the same time, that the schoolmasters would be a little less practical and rather more transcendental. (It is a popular belief that the schoolmaster is inimical to physiology and dietetics. The *Times* speaks of the "unphysiological schoolmaster." Well, I have known some of my craft fairly accurate in diagnosis and even cognisant of the difference between a proteid and a carbohydrate.)

There is no shadow of blame attaching to the restricted range of medical responsibility. It is the duty of the doctor to make considerations of health paramount, just as it is the duty of the schoolmaster to have regard to the general well-being of his pupils, so far as he is capable of a comprehensive vision. It is always possible that these interests, or duties, each of them right, may come, not into conflict, but to overlap or neutralise one another in part. The medical scope is clearer in its definition than that of the foster-parent. The latter is vaguer but wider. There are issues from the extension of hours in the dormitory which come within the domain of the schoolmaster, and his first thought is to this contingency. The doctor has done his duty in making a recommendation for longer hours of sleep. The schoolmaster has to face the possibility of misuse of the time, and the certainty in many instances of some relaxation of moral fibre, ensuing from the removal of the bracing influence of early rising. It is certain that just as some boys would gain by more sleep, some would deteriorate by more hours in bed. The fatal need for compromise comes on us again. A little harm must be done to prevent a greater harm. In my own experience and practice the hours of sleep range from 8½ hours for senior boys to 9½ for juniors, and I fully agree that separation of seniors and juniors is necessary to ensure the benefit of the extra period of sleep. No boy is allowed to sit up after 10 o'clock, and all boys, save in cases of ill-health, are required to be down by 7 o'clock. No schoolmaster is justified, in my opinion, in allowing a boy to work after 10 o'clock at night under any pretext, and as a rule in most schools obligatory evening work ceases at about 8.30. Overwork at public schools is rare. It exists, but it is soon noticed and checked. Without mental effort, brain-growth would no more proceed than growth of muscle without physical effort. It is difficult to slacken a discipline already somewhat loose without danger of enervation. Yet all of us, and myself more than most, will wish with Sancho that blest be the man that invented sleep.

It comes to this, however, that hours prescribed for sleep are not necessarily spent in sleep. Every schoolmaster knows that many boys do not acquire the habit of sleeping during the hours already allotted to the purpose. No schoolmaster would dream of limiting arbitrarily the hours of sleep to a degree clearly injurious to health, or, in other words, would keep from bed boys who are ready for sleep. There must be compromise wherever collective discipline is in action. An encroachment, in the nature of this recommendation, upon the general body of scholastic judgment, however friendly it may be, is lacking in breadth. I do not attempt to vindicate the hours or the practice of some schools. Schools are not uniform. Let us hope that in some respects they never will be.

But there is no general disregard of the importance of sleep, and in many instances there is ample provision of undisturbed sleep for the youngest. And it is in this light that one may venture to regard the movement as wanting in consideration for the difficulties which beset the schoolmaster if he must keep a carefully balanced judgment as to the general well-being of the

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average boy. Level up to your 9½ hours by all means for juniors. Suppress the pernicious habit of postponing work to the last moment of the day. Slacken off gradually in preparation for sleep. Remember that change of occupation often functions as rest, and that the waking day must be as long as is safe to permit variety and to prevent the hours of work being too continuous. Reorganise your hours and methods of feeding. Cut down that long period between breakfast and dinner, and forbid games to be played immediately after a meal. And remember that there are other considerations than the plain truth of the value of sleep. The medical expert adopts the same attitude as the educational specialist. Each claims his special want, regardless of the whole structure of habit and discipline. However perfect the counsel, it cannot operate in a region already full to repletion without a corresponding displacement. The day is far too short as it is for all the recommendations, and this last one, while it is wholly sound in its physiological purport, would not necessarily be beneficial in the general economy. The remedy in all such matters finally lies with the parents. It remains for them to exercise discretion in the selection of a school to meet their individual requirements, and, it may be added, they will be fortunate if they find all their wants satisfied.

SCHOOL OUT-OF-DOORS.

By HUGH RICHARDSON, M.A.

Science Master at Bootham School, York.

A RECENT report of the British Association committee "On the Teaching of Botany in Schools," printed in the annual volume of the Association for 1903, page 427, has strongly encouraged outdoor work. At a subsequent conference on the teaching of geography it was said that outdoor work, however desirable, was impossible in public schools. From South Africa comes a cry that the call of the veldt is so strong that indoor work seems to have no *raison d'être*; and at home some of the wildest devotees of nature-study have spoken as though every subject was better for being taught out-of-doors.

Let us consider, then, whether outdoor work in botany or in geography is possible, and, if possible, to what extent useful. Something may depend on our attitude towards school work in general. Do we regard it from the monastic standpoint as something good to be doing, or from the industrial as something good to have done? To some teachers outdoor work will be justified if it affords opportunities for learning or understanding what could never be achieved by unlimited indoor work. Others will deprecate all outdoor work if it ever leaves a portion of the class not strenuously employed. For each of us the practical question is, Can we convince both colleagues and headmaster that the outdoor work is sufficiently serious to justify us in using school time for it?

There are some phenomena, such as a flooded river, a bank of boulder clay with scratched pebbles, an eclipse of the sun, the seashore at low tide, which no amount of indoor talk, even helped by lantern slides, will enable a boy to realise. And when we wish to impress a vivid first-hand knowledge of phenomena as a basis for future discussion, it may be well worth while to use an hour's school time to get the class a mile away, even if they only spend one quarter of that hour in actual contact with the facts.

There is, of course, much good teaching material close to hand—the school garden for botany, and the view from the roof for comparison with Ordnance maps. But merely to mention things in school on the chance that some boys (? 10 per cent.) will look at them afterwards is not effective teaching. We are not content in mathematics merely to mention the possibility of doing sums or riders. And unless outdoor work is done in school time it is very difficult for a boy in the cricket xi. to do it at all.

Given the cordial support and co-operation of headmaster and colleagues, it is sometimes possible to contrive rather longer expeditions. For instance, the Ouse at York is some eighty miles from the open sea at Spurn Head, yet the tide reaches Naburn Locks, some five miles below the city. A comparison of the Admiralty tide-tables and an old British Association (1864) Report showed that the spring tide would be high about 10.30 a.m. on a certain Thursday in November. The railway guide showed a train at 9.27 a.m., and it seemed possible to get to the locks just before high tide, IF (i) the boys might be liberated from a previous class at 9.10 instead of 9.15; (ii) if they might be entirely excused a geometry class at 11.45; (iii) and if I could be back in time for another science class at 11.45.

A previous visit to the locks had paved the way. I told the lock-keeper that I was a schoolmaster, and broached the idea of bringing boys. "Is it a Sunday-school? Do they mind what their teachers tell them?"

My colleagues were sympathetic, but made stipulations: the mathematical master that the boys must not know of arrangements until after their preparation had been done, because *if* it was not a fine day, &c. So the necessary notice was written on the blackboard after bedtime telling the class why, when, and where to meet. Railway fares were charged to the laboratory account. We reached the locks just in time to see a flotilla of barges arriving on the tide.

We saw weir, locks, sluices, floodgates, scale of feet depth, &c. Then I hurried off to catch a return train in time for the later class, leaving the boys to walk home. They dribbled in between 12.30 and 1 o'clock, signing their names and time of arrival on a slip of paper. An account of the outing was written into notebooks in

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evening preparation, and showed what interests they had found.

Another day a colleague helped me to take three classes jointly. Certain questions had previously been dictated into their notebooks :—

"What is the difference between a coppice, a plantation, and a self-sown wood?"

"What trees appear to be naturally wild in the neighbourhood?"

"What other plants besides heather grow on Strensall Common; and which of these grow amongst the heather or away from it?"

"Of the plants along the river Foss, name those growing with their leaves (*a*) wholly submerged; (*b*) partly immersed; (*c*) wholly out of water."

The 9.4 a.m. train took us six miles out to Warthill, where, close to the station, we saw the three varieties of woodland. The signpost at the cross-roads half a mile further was designated as the next stopping-place, and here gorse and rest-harrow were seen on sandy ground. Half a mile further we met on a sandy bracken-covered hillock overlooking the common with its curiously contoured areas of grass and heather. The questions were answered in evening preparation, and the answers discussed at the next lesson.

We took the same walk again in autumn, when ferns, mosses, fungi, autumn leaves and berries were the prescribed subjects of interest. Everyone was to collect what he could, and on returning home to arrange his collection in a laboratory tray.

The outdoor world is the place for observation, but it is not the best place for explanations requiring continuous attention. Hearing is often difficult, especially in a high wind and when no surrounding walls enforce the teacher's voice. The class should know beforehand what they are taken out into the wilderness to see. A whistle will call them together for any necessary brief explanations, a stone-heap will serve as a platform, a walking-stick as a pointer. It is of less use trying to be instructive whilst the boys are walking. It is well to know the number of boys who should be present, and to carry a list of names in case a roll-call is required. If outdoor work is to be successful it will be just as necessary to be strict, vigilant, and exacting as with indoor work; and if folly occurs it may have to be weeded out severely. The questions set may well be very definite, *e.g.*, sufficiently definite to allow the answers to be marked. "Write an account of your walk," is always a possible exercise; but it lacks point, encourages discursiveness, and involves much labour in reading answers.

Definite directions may sometimes have to be given beforehand as to clothing, notebooks, and grub-shops. Photographs may be allowed to count as notes. The discussion of results indoors would be greatly helped by lantern slides. I find that the offer of "expenses of production," calculated so as to allow for spoilt work, at one shilling for each accepted negative, will bring in a fair choice of pictures of specified subjects.

Once I took some boys to the Museum of the Yorkshire Philosophical Society to show them various things of interest round which promises had accumulated—fossils, stalactites, flint implements, mammoths' tusks, coral, &c. Next lesson they were asked to write down on small slips of paper the names of any four fossils from the coal-measures. But, "Oh, sir, we didn't know that we were expected to *learn* anything!" The next class that went to the museum took a page of questions in their notebooks to be answered on the spot after carefully reading the labels :—

"Name any animals once living in Yorkshire, but now extinct."

"Name four kinds of fossils found in mountain limestone."

"From what localities have sulphur, pumice, obsidian been obtained?"

Then they were shepherded from room to room and told which questions to answer in each room. I encourage boys to bring notebooks even when I don't expect them to take notes. The notebooks have an unconscious steadying influence, and help boys to realise that they are still in school and that there is something to be learnt.

The Flower Show at the annual Yorkshire Gala is even more of an intellectual orgy than a museum. Once we were admitted half an hour before time, and it was then possible to enforce some of the lessons of the botany class by pointing out the numerous varieties of cultivated flowers, sweet peas, columbines, hybrid roses, exotics, orchids, &c.

But outdoor exercises where the boys do all the work are no less desirable than outdoor teaching. The school grounds allow of some questions :—

"Name all the different climbing plants growing on arbours in the boys' gardens, and explain how each climbs."

"Collect as many different kinds of weeds as you can find in the flower-beds; write a list of those you know, draw and describe the others."

"Make a collection of grasses from the cricket-field, and arrange them in a test-tube stand."

"Mark out a square metre on the lawn, and find how many different species of plants are growing on that area."

The Minster Tower is easily accessible in the 1½ hours of an ordinary laboratory period. From its broad summit, Ordnance maps, opera-glasses, and compasses have helped to identify many points in that wide view of plain and wold.

Simple mapping is possible on any area where the angles are chiefly right angles. We have begun by stretching a chain on the asphalt tennis-court. The boys have paced its length, or parallel to it, until their pacing has become steady, and they know how many of their paces, twenty-five or twenty-six or twenty-seven, make one chain. They can then pace the playground or cricket-field and draw plans of these. Two picked boys can work simultaneously at a base-line and plane-table survey of the same area.

The winter is too cold for this outdoor work.

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I remember trying it in bitter north-east wind and driving drizzle. The boys wore coats and gloves and did their best, but their fingers were very numb. At midsummer midday I have seen a botany class hopelessly slack with the heat. Outdoor surveying is perhaps most welcome and most useful in March, when the marking out of the mile track naturally turns our interests to field measurements.

I have tried to find an outdoor exercise in the use of Ordnance maps in which boys might be set to work alone or in pairs, but out of sight, so that they must trust the map for finding their way. A simple agricultural survey met this purpose. Every boy was provided with a six-inch map. Symbols C, P, R, H, &c., were agreed upon for corn, pasture, roots, hay, and other crops. We began all together marking down how each field was used. The boys quickly caught the idea, and could then be detached in pairs to make their way back by circuitous routes. Next lesson allowed of a wider sweep. Two boys who had cycles started to survey the furthest corner of the map, others took routes mostly radiating from the school, the most active volunteering for the longer routes. On a third morning we took train three miles out to Poppleton. Here the class was broken into a dozen pairs, each to take a different route, whilst I cycled back to my noonday lesson. On their return the maps were laid out for inspection and marked according to quantity of work done. Afterwards each boy copied up the observations of his schoolfellows, and the maps were finally painted in colours according to the crops grown.

But need I say more? The Universities have for long recognised that in geology open-air work is essential, and those who have listened to Prof. Hughes on Ingleboro', or to Sir Archibald Geikie on Tantallon cliffs, need no further evidence to convince them of the usefulness of school out-of-doors. If I have ventured to relate my few experiments in such teaching, personally and in detail, it is because such details will best enable other teachers to judge what is practicable under their conditions.

BOOKKEEPING AS A SCHOOL SUBJECT.

By JOHN THORNTON.

I.

SO great is the prejudice in the minds of many schoolmasters against school bookkeeping that one never feels at liberty to introduce the subject to the pedagogic ear without an apology. This prejudice is, however, not difficult to account for, and it ought not to be difficult to remove, for it proceeds partly from false notions of what bookkeeping really means, and partly from a misconception as to its aim and purpose as a school subject. And, owing to these misconceptions, school bookkeeping is tossed contemptuously on one side as a subject of very doubtful practical utility, and in any case a worthless and mischievous encumbrance to the real work of teaching.

The first objection to school bookkeeping is that it is *a subject of no practical utility*. This would be an absolutely conclusive objection if it could be substantiated, but it cannot. There is no solid ground for it to stand on. It is based on an erroneous idea of "practical utility," and an equally erroneous idea of school bookkeeping.

What do we mean by practical utility? The schoolmaster who has set his face against school bookkeeping thinks he can best answer a question of this kind by going to glean some ideas from a "practical" man. Distrusting his own judgment in such matters, he looks out for a business friend—one in as large a way of business as possible, employing many clerks—and submits the point to him: "What should I teach my boys that will be of real practical utility to them in after-life?" And his friend very naturally replies: "Do not trouble about bookkeeping. I do not want a youth to come into my office with any preconceived ideas. He will soon learn all the bookkeeping he needs when he is with us. I want a lad who is willing to be guided and quick to learn and adopt our ways of doing things. These are the boys who make the best clerks." And the schoolmaster quite believes that his friend has given him the key to the solution of the practical utility problem. The conclusion arrived at is that the best practical education is that by which schoolboys may most readily acquire those qualities that go to the making of the model clerk—patience, assiduity, docility, quiet plodding, perseverance, and, above all, the absence of original notions. That is the big employer's idea of practical utility. Is it the true idea? Does practical utility simply mean efficiency in a narrow and limited sphere of action, or does it mean power to handle such questions and deal with such difficulties as are likely to occur to the average man in his own ordinary everyday work? Surely we cannot doubt that the latter is the truer ideal.

Schoolmasters are sometimes said to be too authoritative. In this question of practical education they have been much too diffident and deferential. They should not allow their own better judgment to be warped by the narrow ideal of the successful man of business, who is very apt to look at life only through his own office windows and fancy that the little world of his own establishment is a complete and satisfactory epitome of the big world beyond. But, whatever others may say or feel, the schoolmaster knows that the object of all education—even practical education—is not to manufacture a constant supply of promising young clerks, but to cultivate that quality of mind which will develop into all-round manliness—a power to cope with life's difficulties and to grow thereby. Hence, that education which tends to the truest and broadest outlook on life and the clearest and most honest performance of life's varied duties is the one which must prove, in the end, of the highest practical utility.

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But the objection we are considering will be still maintained by some on the ground that it can be proved by facts, and "facts are stubborn things." Very well; let us have the point stated in the most clear and forcible manner by that master of the art of clear and forcible statement —Mr. H. G. Wells—stated and backed up by proof positive in the shape of a "concrete instance" of failure:—

"With regard to scholastic bookkeeping," says Mr. Wells, "it happens that a concrete instance is to hand in the person of X, a person intimately known to me. X attended a school where bookkeeping was taught, he spent long days in the demoralising practice of writing promissory notes, in entering impossible transactions into books which he ruled in red ink, and in balancing these books. X became proficient in these exercises. He was examined twice by that most complaisant examining body the College of Preceptors; and the College of Preceptors signified a more than ordinary appreciation of his distinguished attainments by awarding him 'special certificates' on both occasions, and in the second marking him with 80 per cent. of the maximum marks. Clearly, X is a fine example of 'commercial' education on this subject. From these scholastic altitudes he went into business. He went twice, because on the first occasion he was rejected for incapacity and stupidity—at the desk. The particular operations he had been painfully taught to perform he was not required to perform, and strange things were required of him entirely opposed to his habits of entry and computation. His second attack on business was under cover of a premium. But the inability of his ill-trained mind to grasp business ideas, in spite of a fair general intelligence, became so obvious and painful that he gave up a hopeless career.

"His subsequent experience is of no interest, save that it demonstrates him a person capable of successes. And he believes—and I fully endorse his belief—that had he received, instead of this foolish drill at bogus books, a sound mathematical grounding and a stimulating training of his observation and of his reasoning powers, his experience in those early beginnings would have been entirely different."

This brings us at once to a second question: What do we mean by school bookkeeping? For, in the case before us, it is evident that neither teacher nor examiner had a true idea of the nature and function of school bookkeeping.

About the examination I have nothing to say at present, though I may, perhaps, at some other time. But is it not transparently obvious, from the very vivid description, that the teaching, at any rate, was radically unsound? For school bookkeeping has nothing to do with long days spent in making foolish entries of impossible transactions in bogus books, and most certainly it has nothing to do with beautiful rulings in red ink. This is the too prevalent error to which I have already adverted, that school bookkeeping consists in a monotonous round of distressingly unreal exercises and entries. Cash-book, day-book, and journal, in a seemingly never-ending circle, wearisome as that of blind Samson grinding for his enemies, and as heart-breaking to the bewildered and intellectually-starved schoolboy as "seam and gusset and band" to the poor sempstress of the East End. This sort of thing may be called "bookkeeping," but it has no claim whatever to the title.

If X had only been taught the theory and principles of the subject, there would have been plenty of opportunity for that stimulating training of his observation and of his reasoning powers which Mr. Wells so justly regards as of prime importance.

"But are there," he says later, "any principles of bookkeeping beyond the ordinary dictates of common sense? A few methodical dodges certainly, but a boy trained to think clearly will invent any dodge in bookkeeping in a week."

Are there any principles? Yes, certainly there are. If bookkeeping consists merely in a few dodges which any intelligent schoolboy can invent for himself, how is it that young men have to remain five years in an accountant's office, and to pass several genuinely stiff examinations, chiefly in bookkeeping and kindred subjects, before they are allowed to practise as chartered accountants? How is it that the services of these professional accountants, notwithstanding their deservedly high fees, are in such demand amongst men of high business capacity? Would this be possible if their knowledge of bookkeeping merely meant an acquaintance with a somewhat greater number of somewhat cleverer dodges than those of the intelligent schoolboy?

No; the truth is—and it has been proved in many schools—that bookkeeping, when well taught, means much more than clever and ingenious devices, and is far other than making entries of impossible transactions and ruling them off never so neatly in red ink.

For there are principles: and that is just what makes school bookkeeping a subject of educational value. Thus we come to the second great stumbling-block to the introduction of bookkeeping into schools—the objection that it is of no educational value, and hence an encumbrance to the work of the ideal school.

Indeed, there are some who maintain that all subjects of practical utility are out of place in the ordinary school curriculum. The advocates of this view take bookkeeping as an extreme example of unsuitability, and hold it forth to derision much as the ancient Spartans exhibited drunken helots as a warning to their sons. Bookkeeping has to do with commerce, they say, and commerce means getting the better of your neighbours. "For what is commerce," says one writer on this very point, "but the art of getting as much more than the proper price of an article as you can persuade a man to give, and giving as much less than the proper price as you can persuade a man to take?" It is, moreover, argued that for educative purposes the unfamiliar is much to be preferred to the familiar, because it compels a more intense mental effort. According to this view, verse composition is preferred to prose, "because it is not possible [in prose composition] for a learner to feel the difficulties of language so vividly"—as though we were told, on the physician's authority, what the ignorant are already too prone to fancy, that the nastier the physic the more efficacious the remedy. Indeed, the argument might not unfairly be summed up thus:—(i) The greater the effort de-

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manded of the pupil, the better for mental growth. (ii) The further removed the subject of study from the range of ordinary experience, the greater the mental effort required. (iii) Subjects of practical utility are by no means out of the range of ordinary experience. (iv) Therefore, such subjects are wholly unsuitable for educational purposes.

This kind of reasoning is refuted by authority, experience, and common sense.

It is refuted by authority. Locke says :—

"Since it cannot be hoped that the pupil should have time and strength to learn all things, most pains should be taken with what is most necessary, and that principally looked after which will be of most and frequentest use to him in the world."

It is refuted by experience. English higher education has been based on this idea for many years, and the results have been profoundly unsatisfactory. Here is what one of the latest witnesses declares :—

"We let our ingenuous youth waste their intelligence on dismal pedantries. . . . We are compassed about with glories and mysteries, and feed our children's souls on Greek particles." And, speaking of the result, he says :— "I maintain that it is impossible to have anything worse, and that the majority of the boys we turn out are intellectually in so negative a condition that any change would be an improvement."

It is refuted by common sense. Even the very patients themselves, weary of their nauseous doses, begin to ask what is the use of it all, instinctively feeling that things ought to have some use, even studies at school, if they could only discover what it is. And, in good sooth, what *is* the use of this kind of education? We cannot live on the past. It is not reasonable to expect that the changes of the next century will be less startling than those of the last. The past only dimly and doubtfully prefigures the future. Its lessons are useful chiefly as examples of mistakes to be avoided. We have to educate men and women for present needs and future possibilities, not to attempt to model them on the lines of bygone worthies, however ancient or however illustrious.

But now, supposing it to be granted that practical subjects should find a place in any well-conceived scheme of modern education, what are the claims of bookkeeping? Wherein lies its special value as an educative medium? What are its theory and principles, and how do these assist mental growth?

The main theory of bookkeeping is that every business transaction affects each of the individuals concerned in a two-fold manner. Out of this theory is developed the art of keeping account-books in such a manner that the final statement of the essential results is arrived at by two totally distinct paths, which invariably lead to an identical result.

The main principles are: (i) that this theory can be applied and must be applied to any and every one of the multitudinous and varied transactions of business, private, or national finance, if the record of these transactions is to be correct and complete; (ii) that whatever system of book-keeping be employed (and there are scores, if not hundreds, of different "systems"), all entries, records, and transfers in all the books of account lead up to a clear exhibition of the essential facts of the business by two distinct courses; (iii) that the final results thus arrived at will always, in the absence of clerical error, agree, and if they do not so agree at the first trial an error certainly exists, and the books must be examined and the figures checked until the same is revealed and amended.

The study of these principles and their application yields the following educational results :— The pupil's *interest* is quickened and kept up in two ways—first, by the sense that he is dealing with the actualities of the outside world; and secondly, by the fact that he sees the *goal* full in view all along from start to finish. He knows what is expected of him, and he tries to fulfil expectations, just as in football the merest beginner sees the ball and sees the posts, and, clearly understanding that the object of the game is to get that ball to go between those posts, is fired with lively zeal to do his share of the work.

His powers of observation and reflection are exercised and strengthened by having to grapple with repeated problems of gradually increasing difficulty; such problems, for example, as those that refer to the two-fold nature of some particular transaction—investigation of the best means of leading up to the final result—questions as to the manner in which entries or transfers may affect the final result—investigation of the best means for detecting and preventing clerical errors—and a careful study of the clearest way in which the essential financial results may be fully, truthfully, and transparently set forth. By this study, habits of accuracy and watchful care are induced through the knowledge that the most trivial error is sure to be detected in the end, and that it is far less trouble to avoid making mistakes than to have to trace them out and remedy them afterwards.

But I have, I fear, transgressed the limits of space allotted to me, and must therefore postpone for another article what I have to say on the proper way to teach bookkeeping in schools in order to produce the best educational result.

THE HEATING OF SCHOOL BUILDINGS.

By A. E. MUNBY, M.A.

WARMTH is not only a necessity for physical existence, but also for successful mental development. The problem of obtaining a proper temperature in schools is therefore one which should be studied, not only by those who are responsible for the erection of school buildings, but by those who have the administration of them. It is not suggested that a schoolmaster should trouble himself with the technical details of such a subject, but, as he often has considerable discretionary powers when such work is contemplated, that a knowledge of the principles and

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merits of the different systems in use would be of value.

There are many factors to be considered in a scheme for heating, the relative importance of which will vary in different cases. Generally speaking, however, the main objects are the provision of a controllable temperature ranging from 55° to 60° F., provided by some apparatus of a durable character, involving a not unreasonable outlay both in first cost and maintenance, and preferably amenable to unskilled labour.

For our guide to general principles we cannot do better than turn to Nature. It will be readily conceded that no more pleasant or healthy source of heat exists than the sun, the radiant energy of which being only converted into heat when it strikes us, enables us to be warmed while at the same time enjoying the respiration of cool air. We can hardly hope to imitate Nature's method in its entirety; indeed, as an ideal to be followed in practice, this has been criticised, because a certain proportion of indirect heating by warmed air is generally desirable on account of the miniature nature of any sources of radiant energy we can supply; but the fact remains that the supply of radiant heat coupled with proper ventilation should be the aim of any good system. The proportion of radiant heat emitted from a body rapidly increases as its temperature rises, but at low temperatures most of the heat merely warms the surrounding air by direct contact. The writer only knows of one instance (and that not in this country) of this principle of radiation being employed on a grand scale. In this case the interior face of a hollow wall forming the whole end of a large hall is highly heated by air passed through the internal cavity before the hall is used. The occupants facing this wall are then bathed in a flood of radiant energy, while they breathe air admitted at the external temperature.

The problem of successful heating is, however, not merely one of temperature; proper humidity and ventilation are essential attributes. A dry heat, owing to the increased evaporation from the pores of the skin, decreases the actual warmth received by the body, and tends to necessitate a high and enervating temperature in a room in consequence. Again, air in contact with very hot bodies is liable to have the small amount of organic matter which is always present actually charred, which produces a most disagreeable effect. Means should therefore be provided for removing the hot air immediately rising from such contact by a suitable scheme of ventilation.

In discussing the practical methods of heating, it will be convenient to divide the subject as follows:—1. Stoves for fuel or gas. 2. Open fires. 3. Low-pressure hot water systems. 4. High-pressure hot water and steam heating. 5. Heated air. 6. Electric radiators.

1. Closed Stoves for coke or coal are the cheapest, most economical in fuel, and the worst form of heating agent. They are not approved by the Board of Education for heating schools. The combustion is much more complete than in an open grate, and 60 to 70 per cent. of the heat obtainable from the fuel is often communicated to the room [1]; but stoves are frequently overheated, and, in the almost invariable absence of ventilation over them, char the air in the manner just described. Another serious and more insidious defect is the escape of poisonous gas from the partly burnt fuel through leaky or insufficient flue-pipes, or even through the stove itself. If a stove must be used, it should always be larger than the size required according to the maker's ideas, and the flue should be of ample size and free from sudden bends, which seriously check the draught. Flues may run horizontally quite successfully provided that the total vertical length, minus the horizontal length, would be sufficient to give a good up-draught. The air in rooms heated by small stoves might often be much improved by placing a large ventilating hood, discharging into the outside air, immediately over the stove. With gas stoves, to which the above comments apply generally, it is very common to find the flue-pipes of inadequate size and with right-angle bends. What are known as "lobster-back" bends should be insisted on in such work.

2. The Open Grate, which may almost be said to be characteristic of this country, still finds a large place in school heating. It is the most pleasant, wasteful, and perhaps the worst distributor of all our heating agents. Though different types of grate vary much in efficiency, a loss of 90 per cent. of the total heat of the fuel is not at all uncommon; nevertheless, owing to its cheerful appearance and simplicity, the open fire maintains its popularity. There are, however, many instances where, in buildings of fair size, the substitution of hot water or steam systems might decrease the coal bill by something like one-half. Maintenance, again, in matters of stoking, cleaning of grates and chimneys, and in repairs, is a much greater item with open fires than is often imagined. In a good type of grate, however, the heat is largely obtained by radiation, and good ventilation in the room is set up. As to the forms of grate, these are legion. The dog grate standing unattached is probably the worst—less efficient even than the old-fashioned straight-backed grate, and owing to the large area of the flue-mouth it is very liable to smoke. Grates with backs sloping well forward, and having some form of fresh-air inlet, are the best. The back, by radiating heat into the room, greatly increases the efficiency, while the fresh air is warmed by the heated brickwork behind before introduction, thus utilising heat usually wasted. Such inlets, however, should be controllable. An amusing instance has been cited of a room in very rigorous weather actually becoming colder and colder as the fire was increased, owing to the increased draught of fresh air.

The ventilating powers of a grate are usually rather misdirected, as the air is drawn off from the room at too low a level. This might be

[1] Those interested in actual data should consult the reports of the Smoke Abatement Committee.

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remedied by forming a vertical flue, open at ceiling-level, and at the bottom under the grate itself, on one or both sides of the chimney-breast, which would cause the foul air from the top of the room to be drawn away for combustion.

The absence of all ironwork in a fireplace has the advantage of dispensing with cleaning and possibilities of breakage. The writer has successfully employed a fireplace faced with ordinary bricks surmounted by an arch of roofing tiles; the back (sloping forward) and the splayed sides of the fireplace are in fire-brick, and the hearth, on which the fuel is placed directly, is of fire-lump slabs. The appearance is very good, and the fires are found to last a long time without attention.

3. LOW-PRESSURE HOT WATER SYSTEMS.—Hot water circulating in pipes and radiators is the most usual substitute for open fires, the heat being supplied by a central furnace and boiler working at the ordinary pressure of the air. Although the first cost of such an installation is considerable, an average figure for the whole plant being £10 per radiator, the lower working cost soon repays the initial outlay. If the work is well done the cost of repairs is exceedingly small, while the saving in service is great. The usual cause of failure is the use of too small a boiler, which, in cold weather, results in over-firing, and thus in greatly increased wear and tear. If several firms are asked to quote prices without the specification of details, this scamping is very apt to occur. The type of boiler is important; some sectional built-up form, with the water below as well as above the fire, and with good arrangements for cleaning, should be selected. The grate area of the fire should not be less than one-third the number of square inches that there are square feet of radiating surface in the installation. The temperature to be maintained in schoolrooms may be taken at 60° F., and 5° lower in passages, and to obtain this a radiating surface (either in pipes exposed or radiators) should be about 1 square foot for every 100 cubic feet of space to be heated. Questions of aspect, window area, and materials must also enter into such calculations, which are, of course, the work of the architect and his engineer. The cumbrous 4-inch pipes have now entirely given place to radiators connected by smaller pipes, a much more sightly and cleanly arrangement provided trenches in the floors are avoided, which are always impossible to clean and involve much loss of heat. Nothing is better than a plain radiator of the ventilating type, and one not built up too compactly. Water should never be drawn off for use from such hot-water systems, as this leads generally to rapid furring of the pipes. Finally, this system of heating possesses no possible dangers and requires no skilled attendant.

4. HIGH-PRESSURE HOT WATER AND STEAM.—Although not the same, as these systems have much in common we may conveniently discuss them together. The use of steam has not, until recent years, found much favour in this country outside our factories, though in America it is the usual system adopted for heating all classes of buildings.

The chief distinguishing features of these systems lie in the higher temperature of pipes and radiators, which often exceed 250° F. as against, say, 150° F. for low-pressure radiators. This enables the radiating surface required to be proportionately reduced, while the boiler becomes a mere coil of pipe heated in the furnace. Owing to the smallness of the pipes and the lesser importance of differences in level, these systems are better adapted for installation in a building already erected than is the low-pressure system; the outlay originally involved is, moreover, rather less than for the low-pressure system. To turn to the other side of the picture: owing to the small amount of fluid in the pipes, these systems though soon "up" are also soon "down," and more liable to the effects of frost. Persons and combustible substances must be protected from contact with the radiators and pipes, which would inflict burns. The cost of repairs is greater than with low-pressure systems, and as the bursting of a pipe (though this would generally occur in the furnace) would be a source of danger, and bad regulation of the temperature might mean unpleasant noises, a skilled attendant is necessary. On the whole, therefore, these systems are better adapted to large than to small institutions.

There are several modifications of these systems. In a room insufficiently warmed by a fire a single radiator may be often most satisfactorily installed at the remote end, heat being supplied to it by water circulating in a coil of pipe heated in the fire.

Again, water may be used under a medium pressure, and steam under reduced pressure, avoiding danger and possible leakage.

5. HOT AIR SYSTEMS.—All heating schemes are to some extent dependent on hot air, since air in contact with any hot body rises and promotes circulation, thus allowing cold air to flow in and become similarly warmed. A certain amount of indirect heating of a building in this way is desirable, but the heating of a building solely by injecting hot air into it must be placed in a different category. This means of heating is generally associated with the "plenum" system of ventilation, in which air, usually washed and filtered, is passed over a bank of hot pipes attached to a furnace, and then propelled into the building by means of one or more mechanically driven fans through a series of spacious flues.

The expense of installing such a system, and also the cost of working, are considerable, and even with the skilled attention required the air at times is found to be very "artificial"—for want of a better word—in character. The absence of pipes and radiators is one advantage, another being that the purity and composition of the air are under control. On the other hand, no heat is obtained by radiation; heat is, in fact, *given to* instead of *obtained from* objects in the rooms, so that the air must be hotter than is desirable for breathing. Although frequent changes of air (each costing something) can be given, no win-

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dows can be opened without upsetting the distribution. In exceptional cases, when fresh air is unobtainable outside the building, the system is valuable. Very diverse opinions exist on its merits for general purposes, the writer's view being that it is often installed with much waste of money in unnecessary situations, through an ill-considered idea of being "up to date."

6. Electric Radiators.—Although the decrease in the price of electric energy, which promises to continue, especially for day loads, has hardly yet brought the electric radiator within the sphere of practical politics for school heating, for occasional use or to make up small deficiencies it is very valuable. The cleanliness, saving in attendance, and the portability of these radiators are great recommendations, and the cost of installation, in a building already lighted by electricity, is not great. The best type is that consisting of large glow-lamps backed by reflectors. If these are kept bright a very large proportion of radiant heat is obtained. On this account, however, the number required is greater than for hot-water radiators. To heat a classroom for thirty boys, for example, at least four would be desirable. About 750 watts are required for every 1,000 cubic feet of space, which means that if electricity could be obtained at 2d. a unit a room measuring 10 feet each way could be warmed at a cost of 1½d. per hour. The only other expense is the renewal of the lamps, which cost about 5s. each and last some 800 hours, adding nearly a farthing per hour to the running cost of a three-lamp radiator. These figures will enable a comparison of cost with other methods to be made.

THE STUDY OF SPEECH SOUNDS.

By Prof. Walter Rippmann, M.A.

II.

My first article, in the January 1906 issue, contained some general considerations bearing on the study of speech sounds, and these suggested an answer to the question why we pronounce our mother tongue badly. It is mainly due to faulty methods of learning the written language, which is not taught with proper regard to the spoken language; partly, also, to the faulty methods employed by many teachers of voice-production and elocution. Expressed more generally, we speak badly because we hear badly; we do not realise how we ought to speak, because we do not know how we actually speak.

The remedy suggests itself at once: let us pay some attention to the actual speech of the present day. That seems simple enough; yet it brings us to a thorny question. As soon as we begin to inquire what the actual speech is, we recognise that there are many kinds of speech. The man from Sheffield does not speak like the man from London; the clergyman does not speak like the costermonger; the bookmaker does not speak like the bookman. If we are to consider all the existing varieties, our task will be endless. We must fix upon some standard.

Is there any standard of English speech that meets with universal acceptance wherever English is spoken? Unfortunately, there is not as yet. Its existence presupposes years of devotion to the very problems which we are now considering. In France there is something practically amounting to standard speech; so there is in Germany. In England we have no recognised standard, but it is most desirable that we should have one; the consequences would be valuable and far-reaching.

Is there no form of English speech that seems likely to assume this important position? Make every allowance you will for the fact that I am a Londoner; it seems to me that London speech has more likelihood of becoming the standard than any other. Not *any* London speech, of course, but the speech of the educated Londoner, which is already practically that of all educated speakers in the South of England. London is the literary centre of the English-speaking world, the seat of what will soon be its greatest university, and the political centre of the British Empire. Educated southern English is more widely acceptable than any other form of the mother tongue. The universities of Oxford and Cambridge and the great public schools have long served to spread it. The speech of our actors and actresses approximates to it more than to any other standard.

I cannot hope that this statement will convince our cousins in America, or even our brothers in the North. But if they agree with us in considering it important to establish a standard, would they have all English-speaking people adopt the speech of Scotland? Or would they have us bow to the authority of Webster's dictionary, which seems to be the dictator of American speech?

Granting that the proposed standard has yet to win general acceptance, it becomes clear that if it is to be made serviceable we must take steps to record it. We cannot teach it entirely by word of mouth, nor can we settle disputed points only by debate. How are we to represent the standard speech?

From what was said in the first article, it is clear that the conventional spelling will not serve our purpose. Whatever our pronunciation may be, we all spell alike. We require a standard alphabet fulfilling the requirement that every sign should represent one sound and one sound only. If that alphabet is of such a kind that the sounds of foreign languages can also be represented by it, this will be a manifest gain. If the signs employed are already at the disposal of most printing establishments, that will be another point in its favour.

Many phonetic alphabets have been devised. Some are suitable for one language only; others necessitate the casting of numerous fresh letters; others, though they have much to recommend them, have been used but little. The only alphabet which fulfils the conditions enumerated above,

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and is extensively used, is that of the *Association phonétique internationale.*

Many English teachers of foreign languages are familiar with this alphabet: it is becoming common in books for the early teaching of French, German, and even Latin, and use is made of it in an increasing number of grammars. To those who are unfamiliar with it, the strange appearance of well-known words is at first repellent; but the same feeling of discomfort is experienced whenever we meet with an unconventional representation of sounds. Even such small matters as the American spelling of *theater, center, honor, color,* jar upon us; it is only natural that a phonetic alphabet should not be immediately attractive. It looks difficult, too, especially in the case of English, where the conventional spelling is so far removed from the spoken language. Spanish and German look comparatively easy when written in this alphabet; French looks harder; but English looks strangest of all.

When, however, the student summons up courage and has the honest intention of seeing "whether there is anything in it," he is soon obliged to acknowledge that the alphabet is very quickly learnt. Many sounds are represented by the same signs in this alphabet as in our ordinary English spelling.

The consonants are, indeed, quite easy to learn: "b" is used for the first sound of *but*, "p" for that of *pat*, "m" for that of *man*, "d" for that of *dab*, "t" for that of *tap*, "n" for that of *nut*, "g" for that of *get*, "k" for that of *kitten*, "w" for that of *wit*, "v" for that of *van*, "f" for that of *fan*, "z" for that of *seal*, "s" for that of *seal*, "r" for that of *red*, "l" for that of *lip*, "h" for that of *hot*. The letters *th* represent two sounds, neither of which is made up of *t* and *h*; special signs are required. The old English sign "ð" is used for the sound of *th* in *this*, the Greek "*θ*" for the sound of *th* in *thistle*. The letters *ng* are not a satisfactory representation of the last sound of *ring*, so a combination of them (ŋ) is used. There are no convenient signs in the ordinary spelling for the last sounds in *dash* and *edge*; "ʃ" and "ʒ" are used to designate them. For the same reason "j" does duty for the first sound in *yes*. Those who wish to have a sign for the *wh* which they distinguish in sound from *w* make use of an inverted w (ʍ). It will be seen that two-thirds of the signs for consonants give no trouble whatever, and that the rest are easily learnt.

The signs for the vowel sounds are more difficult, the reason lying less in the signs than in the nature of the vowels themselves. It is here that the conventional spelling is most faulty, that speech is most liable to change, and that deviations from the standard are most noticeable. It requires some care to gain a knowledge of the vowel sounds, and a set of symbols to indicate them will render great service to the student.

To give anything like a full account of the vowel sounds in what we have agreed to regard as standard speech would take up more space than is at my disposal. It must suffice to give the signs, arranging the sounds, not according to the mode of production, but again according to the familiarity of the signs used.

The first vowel in *father* is designated "ɑ," the first in *house* "a," that in *bet* "e," that in *bit*[1] "ɪ," the first in *boat* "o," that in *put* "u."[1] The vowel sound in bat is "æ" The first vowel sound in *fairy* is "ɛ," the first in *boar* is "ɔ"; they are the "open" *e* and *o* sounds, and the "open" signs "ɛ" and "ɔ" have therefore been chosen to represent them. The remaining vowel sounds are "ʌ" and "ə," the first and second vowel sounds respectively in the word *butter*.

To indicate that a vowel is long or half long, the signs ":" or "·" are added; to show that a syllable is stressed, the accent (ˈ) is prefixed.

For the purposes of the beginner, these signs suffice. It will be conceded that they are not such a formidable obstacle after all. It is our frequent inability to distinguish the sounds of speech, not the difficulty of this or that set of symbols, that makes it hard for us to study the spoken language. This slowness in analysing sounds is not inherent in us. Like the power of discriminating colours, it can be trained; and no one need despair of training his ear to hear the spoken language merely because he is not musical. It is surprising what can be accomplished by a little systematic observation of speech sounds.

(Are we to introduce the phonetic alphabet into the class-room? This is being done with excellent results in French and German classes. Will it be equally serviceable in teaching the mother tongue? I do not wish to discuss the question whether children should use this alphabet in the earliest stages of learning to read and write the mother tongue; there seems no likelihood of such a suggestion being acceptable at present. On the other hand, I believe many teachers who have studied the subject will be glad to make use of a chart containing the signs for English speech sounds suitably arranged, such as has been prepared by Prof. Viëtor.[2] Children learn the signs quickly, and can then be shown their mistakes better than in any other way.)

The student who has given serious attention to the sounds of English speech will benefit in many ways. If he is interested in the historical study of the language, a flood of light will be thrown upon sound-changes which previously had little meaning for him, but now are found to have a simple explanation, and, in many cases, may be illustrated by similar changes in progress at the present day. If he wishes to qualify for a career in which public speaking is required, he will have a firm basis on which to support his study of that form of speech which is most suitable for

[1] In more precise transcription a distinction in quality (quantity is specially indicated) is made between the *i* sounds of *bit* and *lead*, *put* and *brood*, the signs "I" and "U" being used to indicate the vowels of *bit* and *put*.

[2] It is published by Elwert, Marburg.

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declamation. If he becomes a teacher of the mother tongue he will be able to recognise not only that the speech of some of his pupils is faulty, but also what is the cause of their faulty utterance. He is able to devise suitable exercises to overcome their difficulties. He can make them conform more and more to the standard speech which he has studied methodically, instead of being content with a vague impression of what is correct.

In course of time we may have a good supply of such teachers. Then the standard speech will spread far more rapidly than at present, and a growing number of men and women will take an intelligent interest in the spoken language. How far this will affect its development, it is impossible to say. Perhaps it will reduce the rate at which changes are now made, but it will never arrest change altogether. Perhaps it will confine provincial speech to narrower limits; it will probably never take its place entirely, for provincial speech yields very slowly. There can be no doubt that universal education has influenced the speech of the present generation, although no statistics on the subject are available. As elementary education is improved, and with it the teaching of the mother tongue, we may look forward to a time when every child will have an opportunity of acquiring the speech which now is confined to the educated. It may still retain the local habits of speech when at home; but at school, and elsewhere in after-life, it will know how to use standard speech with fluency and ease.

The immediate aim of the phonetician, however, must be to ascertain this standard speech. We have decided what speech is to be our standard, and the best means of representing it; we must set to work and record it. No individual speaker can be our authority, and we have to obtain the pronunciation of as many educated speakers as possible. In most cases we fortunately have no doubt; in others we are yet in need of statistics. Thus we all pronounce the *h* of *humble*, and drop the *h* of *honour*; but how about the *h* in *humour*? We have no hesitation about *haul, maul*, &c., but how do the majority pronounce the *au* of *launch, laundry, haunt*, and similar words? We know how to pronounce *rude, plume*, &c.; how about the *u* in *lute, luminous, lugubrious*, &c.? What is the proportion of educated speakers who drop the *k* in *asked*, the *t* in *last night*, in *Christmas*? Do the majority insert an *r* sound in the *idea*(r) *of it*? What is the most common pronunciation of *luxurious, gaseous, dubiety, chimaera*, and many other words?

From the few questions given, it will be seen that much yet remains to be done. I should be glad if this article had succeeded in enlisting the services of a few more students of a very engrossing subject. May there be some at least who will take it up seriously, and proceed further than interests of other kinds have enabled me to do.

It is as a teacher and student of foreign languages that I first became enthusiastic about phonetics; and in the third and concluding article I propose to discuss the importance of phonetics to the modern language teacher.

GLOBES AND MECHANICAL MODELS IN THE TEACHING OF GEOGRAPHY.

By J. W. Jarvis,
St. Mark's College, Chelsea, S.W.

II.—Relief Maps.

An ingenious writer in a recently-published ladies' journal explains to her readers that she illustrated the difference between a mountain and a hill by two jam-pots—a one-pound pot and a seven-pound pot—placed on a tray and built up with sand. This primitive form of relief model, we are assured, accomplished its purpose, and therefore it was effective. But since the teaching of geography has become a fine art, it is necessary to abandon our jam-pots and to turn to our new friends, the enterprising publishers. And to demonstrate how really enterprising they are, one firm alone has issued no fewer than thirty-eight relief model maps of different parts of the world, at prices varying from 18s. 6d. to £2 10s. each, the total value of the complete series amounting to more than £65.

The name relief map has been borrowed from the technical term "relief" used in sculpture and architecture. It is understood to express the projection or prominence of a figure above or beyond the ground-plane on which it is formed. There are three classes of relief: high (*alto-rilievo*), low (*basso-rilievo*), and middle or half (*mezzo-rilievo*), according to the degree of projection above the plane. We have now a new term, photo-relief, which means that a relief has been photographed and the result enlarged and printed on a map. These photo-relief maps are rapidly coming into use, and they are considered an excellent substitute for a relief model. They contrast very remarkably in price; a relief model of the British Islands, 32 inches by 43 inches, costs 27s. 6d., and a relievo map, 36 inches by 28 inches, costs 5s.

Messrs. Arnold, of Leeds, have developed the art of relief model map-making in several very necessary directions. The material used is practically unbreakable, and will not chip or crack. This chipping and cracking was a serious defect in the old models, which speedily rendered them useless and unsightly. They are now made of plaster of Paris combined with a fibrous material, which not only binds the mass together, but also makes them lighter in weight. Just as hair is used by modern plasterers, and as straw was used with clay in ancient Egypt, so this fibrous material gives strength and cohesion to the cast. The surface is enamelled in permanent colours, and the printed names are indelibly painted on. When the maps become dirty they can be easily cleaned

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by first dusting off all the loose dust and then gently washing the surface with lukewarm water applied with a sponge. They should afterwards be thoroughly dried and left, and the surface will be found not to have been injured in the slightest degree. All the maps are light in weight, are easily moved about, and can either hang on a wall, be stored in a cupboard, or be kept in the separate packing-cases in which they are sold.

Like many other pieces of school apparatus, the first cost is considerable, but when it is borne in mind that a relief model outlasts several ordinary wall-maps, and that the physical features of a country do not change in the course of years, it is easily seen that it may prove more economical. Curiously enough, it is found that English models are produced at about one-fourth the cost of similar models made in France, Germany, or Switzerland. In these countries all schools must be provided with relief models, so there is a large market for this material on the Continent. The models vary in size from 21 inches by 27 inches to 51 inches by 47 inches, but the larger number are about 31 inches by 22 inches. When the *Times* newspaper is laid open it roughly measures 36 inches by 24 inches, and so the sizes of the models may be roughly gauged. The cost also varies from England and Wales, 33 inches by 40 inches, for 25s., to Australia, 54 inches by 47 inches, for 55s. Africa costs 42s., Europe 37s. 6d., and India 45s.

An excellent model of geographical terms, 31 inches by 25 inches, is supplied for 18s. 6d., and in these elementary series a most interesting device is arranged. By pouring water on the map the sea is represented; by using a watering-can with a rose nozzle, rain may be made to fall on the land and run down the mountains as rivers. In the relief model of a mountain lake or spring,[1] if water be poured on it from a watering-can, it runs down the slopes and watercourses into the lake, and then out of the lake into a pail or bucket placed to receive it. The mountain is made hollow, and when it is filled with water a stream issues from the side and continues running into the lake for a quarter of an hour. After using these models the water should be poured off and the surface dried with a sponge or wash-leather.

The most realistic thing is the model of Mt. Vesuvius.[2] By inserting a special charge of a harmless explosive, the mountain can be made to erupt at will, without any danger and to the immense delight of our very young friends, who love to enlarge their borders of knowledge with perilous joys. Happy pupils who can begin geography under these auspices!

For more advanced pupils there is a model of the Aletsch Glacier[3] on the scale of 2 inches to a mile horizontal, and 1 inch to 1,800 feet vertical. The snowfields south of the Jungfrau, the Monch and the Eiger, the *névé* or firn, the striation caused by the downward movement of the ice, the transport of detritus forming lateral and medial moraines, the terminal moraine and the issuing stream (the river Massa, a tributary of the Rhone), are all fully represented, and the Fieschhorn, the Aletschhorn, the Weishorn, and the Marjelen See are also shown.

Messrs. Philip and Son, 32 Fleet Street, E.C., sell a series of unbreakable relief models on a smaller scale for 7s. 6d. each net. These are constructed of a new material, which, by reason of its extreme lightness and durability, is well adapted for this purpose. They will not break or chip even when thrown down or trodden on; the work is executed in very bold and clear relief, and they are especially suited for use before large classes.

All those interested, however, in the question of relief maps should pay a visit to the Science Galleries of the Victoria and Albert Museum, South Kensington. They will see an exhibition of foreign models, not only on large scales, but showing the most interesting details. As specimens of the modeller's art they are unrivalled, and as they are representative of all countries it is possible to form a fairly accurate notion of what a standard relief model should be. Not only are the finished products to be seen, but a most interesting set of four models of part of the Jura Mountains is arranged to show a new process of manufacture. A map of the district is taken on which the contour lines are marked at intervals of 10 metres, or 33 feet, and sheets of cardboard of uniform thickness are cut out so that their outline corresponds with the contour lines. A flat surface is then taken, and the cardboards representing the lowest contour, say of 10 metres above the lowest point in the district, are glued on in their proper places. On the surface of these the cardboards representing the next higher contours of 20 metres are glued, and so on, until the highest contoured cardboard has all the lower contours beneath it. The model then shows the contour lines by the edges of the several sheets of cardboard, and the higher parts are raised above the lower, the vertical scale being dependent on the thickness of sheets of the cardboard. Then the edges are smoothed down, and the minor known features of the district, which, occupying less than 33 feet, may escape the contour lines, are inserted by carving. From this completed model any number of plaster casts can be taken.

All relief maps to be effective have to be constructed on an exaggerated vertical scale. This has been objected to on the ground that quite wrong notions are given to beginners, but it is difficult to see how this can be avoided. As we grow older we throw off the crudities of our early conceptions, and photographs, sketches, books of travel, and travel itself, tend to adjust the truth to us. That relief maps throw a real light upon the configuration of a country and help the mind to grasp a complex situation, may be seen any August day in the Lake District. Stand round

[1] 31 × 27 inches. 23s.
[2] 39 × 26 inches. 23s. Charges are sold in boxes of half a dozen for 1s. 3d., post free 1s. 6d.
[3] 25 × 39 inches. 25s.

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that great model in the upper room of a stationer's shop in Keswick and listen to the remarks of the trippers from Lancashire and Yorkshire as they trace the route of their drive on the previous day, and you will be speedily convinced of the necessity of providing such apparatus for your pupils. When it is remembered that a geological society under the guidance of experts fled to it for enlightenment, can one be surprised that the intelligent tourist finds in it the only method by which he can unfold the tangle of travel in the charming scenes of the Cumbrian Group?

As substitutes for relief models, Messrs. Philip and Son publish a series of Relievo Test Maps of the countries of Europe. These are a set of boldly drawn and coloured maps with physical features shown in striking imitation of an actual relief model. The ten maps only cost 25s. altogether, and as they are 36 inches by 28 inches they should be hung on the school-wall at such a height that the pupils can as easily read them as they would the notices on a notice-board. If the maps are mounted on cloth, with rollers, they cost 5s. each.

An attempt to represent the relief of the land-surface is seen in nearly all the new maps which are now published. In this the Germans for some time led the way, but now all our map-makers—Messrs. Stanford, Philip and Son, W. and A. K. Johnston, R. Johnston, and Arnold—provide physical maps which are as accurate in detail, as striking in colour, and much more permanent than those from abroad. The varnish on the earlier maps had a tendency to flake, leaving islands of white canvas on dark green seas; but this defect has been overcome, and the modern maps are lasting and most serviceable for class-teaching purposes. Messrs. Philip and Son's Comparative Series combine the political and physical features very happily; they are of full size, 80 inches by 63 inches, and their price varies from 16s. to 18s.

For the pupils' purposes a number of excellent maps, orographical in design, have been prepared by two authorities on the pedagogics of geography, Messrs. B. B. Dickinson and A. W. Andrews. They are 1 foot square, without names, and designed to show clearly the chief rivers and important tributaries and the orographical features by shades of colour. The series is especially intended to emphasise the importance of land-elevation by enabling pupils to fill in on the map the details of physical, political, and commercial geography which the teacher wishes to impress on the memory. A map of the whole or part of the British Islands on the same scale is inserted on all the maps as a means of showing comparative size. There are thirty-six in the set, and they are sold for one penny each, net. Twelve maps suitable for the Oxford or Cambridge local examinations are also provided, in an envelope, for 1s. These are most decidedly the best maps published for the pupils' own use, and they can be strongly recommended to all teachers of geography.

ON THE METHOD OF STUDYING AUTHORS: DE USU AUTHORIS. 1641.

By Prof. Foster Watson, M.A.
Professor of Education in the University College, Aberystwyth.

II.

(*Continued from p. 7.*)

4. ALL suitable and flowered epithets should be observed in both orators and poets, especially in Vergil and in Seneca the Tragedian. In this kind are such epithets as: Importuna tyrannis, praecox aetas, Herculeus labor, Vatinianum odium, flagrans ambitio, luxuriantes rami, protervus consuetudinis tenor, effraenis odii furor, inculta morum barbaries. Who is so obtuse in mind as not to see that it is far more elegant to say: indomitae et insolentes Tarquinii libidines imperium regibus Romanis abrogarunt, rather than *nudè et incultè* to say: Tarquinii libido reges expulit? It is far more beautiful and polished to say: Publicae et imminensae opes, nec non immodicae pecuniae vires, inter civiles discordias longè sunt ferro fortiores, than barely and without polish: Nummus est ferro fortior.

5. All tropes, and especially metaphors, should be noted, also allegories, hyperbolæ, litotes, catachreses, figures of speech and sentences, syntacticae promulsides, or the more ornate flowers of speech. For who has dared to aspire to the splendour of eloquence and at the same time held such ornaments in low estimation?

Here is an instance, in the allegory which Puteanus inserts in his praise of Q. Curtius: "Tota narratio exacta est, lenitate quâdam profluens, tanquam ripis clausa, garrulitatis imbre non corrupta trahit oculos, et gemmeo locutionis latice lectores recreat."

Or this from Seneca: "Non dat Deus beneficia? unde ergo ista quae possides? quae das? quae negas? quae servas? quae rapis? unde haec innumerabilia, oculos, aureis, et animum mulcentia? unde illa quoque luxuriam instruens copia? neque enim necessitatibus tantummodo nostris provisum: usque in delicias amamur? tot arbusta non uno inodo frugifera, tot herbae salutares, tot varietates ciborum per totum annum digestae, ut inerti quoque fortuita terrae alimenta praeberent," &c.

6. All the well-known phrases should be placed methodically in a paper-book—*i.e.*, idiomatic phrases in which the *Suadae gloria* especially shines. *E.g.*—

Habemus in votis vestram foelicitatem.
We desire your good success.
Cicero Appium de filiolae obitu certiorem fecit.
Cicero certified Appius of his daughter's death.
Imperator legatos summo honore prosecutus est.
The general entertained the ambassadors nobly.

7. Nor must, negligently, adages be passed by, but their use, occasions, and parallels in other languages should be shown, *e.g.*, Gygis annulum habet. Here show boys the cause of that proverb, from Tully's Offices, lib. 3, or from Plato,

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Πολιτικῶν β. Next, show the use which is made in the passage cited from Tully. Then give the English parallel: *he plays least in sight.* And to this end it will not be without its use if the master spends a leisure hour sometimes in explaining the Adagies of Erasmus. Nor, in my opinion, should he omit descriptions, definitions, vigorous instances of argumentandi, confutandi, confirmandi, amplificandi, contrahendi formulae, periphrases, similitudines, digressiones, synonymata, the differences in which should be shown—*e.g.*, in that sad verse of Ovid—

". . . . tunc es quaesita per omnes
Nata mihi terras? tu non inventa reperta es."

Let the difference be observed between *invenire*, which involves labour, and *reperire*, which is the outcome of chance. So we shall observe the difference between *memoriam* and *reminiscentiam*, *donum* and *munus*. These derivative words will be observed both from Latin and foreign origin, *e.g.*, Latin *uro* from the Hebrew אור. Latin *balsamum* from the Hebrew בעלשם, *princeps olei.* Latin *pario* from the Hebrew פרה, *fructum facere.* See more examples in the dissertation on languages of that very learned man, Thomas Haine.[1] Hence very often the dimness which obscures the minds of authors is expelled, as appears from an interpretation of that verse of Martial, lib. ii, ep. 95—

"Non credo; jura, Verpe per Anchialum."

i.e., *jura*, יפרע חי עילם, *Deus aeternus ulciscatur.* For the poet speaks Jewish, and to Jews that formula of swearing was solemn. See Farnaby *in locum.*

8. For the formulae of transition—of beginning, connecting, and concluding discourse—ease and skill are necessary. With the greatest care, Clarke and Farnaby and others have set their hand to find copious material for entering upon the beginning, middle, and end of a discourse. But the better way seems to be for pupils to collect instances of the formulae for themselves, and so by degrees sharpen their wits and industry. For Horne says he has taught many of those who have neither collected formulae themselves, nor even understood the method of collecting them. Nevertheless, he offers some formulae himself, of beginning, of rendering thanks, of reproving, correcting, exhorting, dissuading, seeking, citing examples, making comparisons, citing testimony, concluding. Let the boy, with his paper-book, select and enter his formulae from the treasures of Tully, Fabius, Puteanus, and Lipsius, and any other sources.

Further, whilst reading, let the context and argument of any discourse whatever be observed, for this greatly exercises the intellect and confirms the memory.

IMITATION.

If we seek the source of imitation, we see that it must be recognised that the Supreme Artificer, who put certain sparks into the human mind by which it is inflamed to imitate almost all natural things, has made them all possess some propensity to compel imitation, and to acquiesce only in imitation of the highest order. After dealing with this from historical and other points of view, Horne turns to the greatest of men, and observes that our rivulets should flow in the same manner as the ocean of others. For Vergil imitates Homer; Hesiod, Theocritus; Horace, Pindar; Seneca, Sophocles and Euripides; Cicero, Demosthenes; nor, perchance, would any one of those have been so great if he had not made use of the former lights. So also it is the happiness of our age to see literature reviving from its dark eclipse. Nizolius, Osorius, Talaeus, Buchlerus, Sturmius, P. Ramus, and a host of others (*cum sexcentis aliis*) have followed closely in the steps of Cicero; Barclaius, Lipsius with his eloquent disciple Puteanus, in the steps of the philosopher Seneca and Tacitus. They have given rise to the nervous succinct brevity which they embraced from the old writers, and communicated it even to the less ripe writers of our time. By this method alone, and, I will say, without any loss of modesty, boys go forth from the trite and dusty by-path of invention. Forthwith, by the help of imitation, not unlike skilled painters and with the same facility, they are able to delineate the most pleasing elegance. It is in making trial of imitation that tyros learn how great is its force, and they should gird themselves to attempt imitation after every reading of their author. After recommending the same method to the best students in theology, Horne goes on to say:—Facilis in errores lapsus, difficilis regressus. As every member of the body has its own special diseases to which it is subject, so there is no power of the mind which has not got its special defect. Who, then, would expect *invention*, and that sublime operation of the mind, to be beyond the reach of error? It is true that there are some vices of *invention* which have been observed by those versed in eloquence. Of these we should take close note, lest, whilst the generous nature of the mind draws the industrious youth to the harbour, he suffer shipwreck in it. Horne then refers his readers to N. Caussin. de Eloquentia, lib. 3, cap. 11, for *Errores Imitationis.*

Such errors are especially:—1. Imitation promiscuously and without due selection, which leads to sterility and barbarism, a *caeca stomachi voracitas.* 2. The close adhesion to one book or another, and neglect of others, both at the entrance and in the progress of studies. Bees should collect honey from varied flowers. 3. Those students make a mistake who are too idly bent on combining the sentences to be imitated in one and the same composition and course of invention. You should exercise yourself on a varied supply of orators. 4. Those are in error who apply themselves to imitation so that they do not exercise invention in its rightful place. 5. Judgment and *artificium* are required both in ornament and in composition of speech, so that

[1] Haine wrote:—Linguarum Cognatio: seu de linguis in genere et de variarum linguarum harmonia dissertatio. 1639.

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the image of the author may be clear in all the lineaments of the imitation, as one sees one's image in a mirror.

Horne then shows that for satisfactory imitation there must be kept in view *inventio*, *dispositio*, *elocutio*. He says that sometimes there should be put forth before the boys "imitation" *in the vernacular*. When boys have arrived at some maturity, and can write Latin moderately, let some polite and pleasant letter or *oratio* be chosen, such as can be found in numerous authors, *e.g.*, in the works of Dr. Hall, Bishop of Exeter, concerning whom it may be said as of B. Augustinus de Varrone: "He was a man learned in every direction, who read so many books that we wonder he had leisure to write anything; who wrote so many books that we can scarcely believe he had time to read anything"; or the Resolves of Feltham may be chosen in English; or the letters of Balzac, or the orations of Livy and Sallust, rendered into English.

Horne gives specimens of early exercises rising from the special to the general, *e.g.*:—

1. There is not so much misery in want as trouble in satiety, may be imitated thus: There is not so great calamity on earth as happiness in heaven.

2. Great favours are always like golden fetters, and subject the receiver to a glorious thraldom.

Horne gives examples also of imitation from the general to the special. Nothing will bring out better the width of application of the term *imitation* than to give one of these examples at length.

P. Valerii Publicolae ad populum Rom. *Oratio*:

"Can, then, no virtue be so sufficiently tried by you, as not to be undermined by suspicion? Should I fear that I, the most bitter adversary of kings, should undergo the accusation of affecting a kingdom? Should I dwell in the very Tower and Capitol, could I think that I was feared by my good citizens? Does my good name among you hang upon so slender a pin? Is my credit grounded so weakly that it more concerns you to look where, than who I am? P. Valerius his house shall not impeach your liberty; you shall have the safe possession of Velia; I will not only bring down my house into the plain ground, but will set it below the hill, that you may all dwell in a higher station than I, a suspected citizen; let him build his house on Velia, with whom your liberty may be more safely entrusted than with P. Valerius."

Imitatio, when Socrates is imagined to plead his cause with the Athenians:

"Shall this still be the reward of virtue, to be pursued by calumny? Can I, who with the purest hands and sincerest heart have worshipped your gods, be thought a contemner of them? You know that I have been pious to men, and how should I be impious to your gods? unless to bring down philosophy from heaven be impiety, or to elevate men's manners to a similitude of the divine persecutions be unlawful and intolerable. Surely suspicion is the offspring of malice, not the issue of a loving mind: you indeed envy my virtues, or fear lest the same crime should be charged upon yourselves, for I know not whether is worse impiety, to say the gods are wicked, or that there are none at all. But how can I be sacrilegious whom the same oracle which you magnify hath vouchsafed to prefer before all the world for wisdom? Indeed, if this be sacrilege, to think the Deity neither an adulterer, as your Jupiter; nor false, as your Mercury; nor drunken, as your Bacchus (the best of which are as bad as the worst of men), then call me impious: for I must neither think the heavens to be quartered among multitudes of deities, nor the divine powers to be subject to human vices, but that that glorious essence which rules the world is far above both man's frailties and corruptions, and you yourselves count the best of men most like your deities; neither do you account it piety to be vicious. Well, enjoy your own follies, and let me die to expiate your wickedness, and let them inform you better of divine mysteries, who may more safely pry into them than Socrates."

Horne, of course, intends such exercises in the vernacular to be followed by exercises in "imitating" Latin in Latin, as, for instance, by taking Quintilian, declam. 1, de caeco—caecitatis innocentia, to produce an Imitatio de Ignorantiâ innoxiâ. For the imitator in poetry, Horne says examples of medleys can be consulted, Scalig. in Crit. and in Hypercrit., A. Rossaei Verg. Evangelizans, and that most learned imitation of Vergil's Bucolics by J. Hawkins of Hadleigh; and he gives a passage from Caspar Barlaeus, and an imitation of it.

From a consideration of Thomas Horne's book, the following points seem to emerge:—

1. That the old practice of the grammar-schools involved a real study of the matter and form of the classics.

2. That the significance of the training was not that it was mere verbal discipline. It was essentially an intellectual consideration of authors, involving critical powers of analysis of thought. It required power of classification of a book, its component parts, its paragraphs, sentences, phrases, words, so as to bring the pupil into touch with the worlds of grammar, rhetoric, dialectic.

3. The processes were dependent, as in modern scientific education, for the most part on the active initiation of the pupil, with the requirement that he should gain command over the material he studied, so as to use it from his own independent standpoint of free composition and fluent speech.

Philips' Nature Calendar, 1906. 6*d.* net.—The new issue of the nature-study calendar published by Messrs. Philip and Son, Ltd., follows much the same lines as that of last year, though it is rather different in style. The calendar will prove useful in all schools where field-work in natural history is encouraged, and will serve to encourage children to observe outdoor phenomena.

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A POLITICAL HISTORY OF ENGLAND.[1]

THESE are two volumes of a new "political history of England" in twelve volumes. We have also received vol. x., but will reserve our remarks on that until we see others of the later parts. We may congratulate ourselves as teachers, who have not the leisure for original research, that at last we can know the latest results of such research. Much has been discovered during the last twenty years; new ways of regarding history and of writing it have superseded the old. As Prof. Tout says (III., 443), "the record far excels the chronicle in scope, authority, and objectivity, and a prime characteristic of modern research is the increasing reliance on the record rather than the chronicle as the sounder basis of historical investigation"; and we therefore peruse this work to find what of our old stock of knowledge requires revision.

As examples of such corrections we take the following:—William I. did not scatter about the country the great estates which he granted, at least with the express intention of thereby weakening the baronage. "It is sufficiently accounted for in part by the gradual spread of the Norman occupation . . . . and in part by the fact that it had always been characteristic of England. . . ." (II., 57). The battle of 1119 is not "Brenville," but "Brémule" (p. 167). "The special creations for which we have distinguished the reign of Henry II. reach further back in time than we had supposed" (p. 190). The scutage of 1159 "was something new—that is, it was as new as anything ever is in constitutional history" (p. 270)—but "scutage goes back at least to the time of Henry I." (p. 266), and the importance of 1159 lies in the fact that then "the principle of scutage was extended from ecclesiastical to lay tenants-in-chief" (p. 269). There were very few earls before Stephen's reign (p. 221). "The papacy, which had secured a new hold over England by its alliance with John, made its position permanent by its zeal for the rights of his son. . . . Under the ægis of the Roman See the national spirit grew. . . ." (III., 14). Isabella of France was not kept in confinement at Castle Rising after 1330; that place was only "one of her favourite places of abode . . . . she wandered freely from house to house as she felt disposed," and died "at her castle of Hertford" (p. 309). "The magnates of France dealt with the succession question as statesmen, and not as lawyers. A later age imagined that the French barons brought forward a text of the law of the Salian Franks . . . . but the famous Salic law was a figment. . . . No authentic Salic law dealt with the question of the succession to the throne" (p. 326). "The system of establishing the royal family as a nobility was so systematically ordered by Edward III. that it has passed for a new departure in English history. This is, however, hardly the case. Many previous kings carried out a policy based on similar lines" (pp. 427–8).

These are the more obvious corrections. But, of course, there is much else that is illuminating. We might mention, *e.g.*, Prof. Adams's treatment of feudal institutions, especially of the bishop-barons in Anselm's time (II., 22), though we should have been glad of his opinion on their homage, a matter in which he differs tacitly from Mr. Martin Rule. Or, we might refer to his treatment of Henry I.'s wars with his brother Robert, and his explanation of the end of the mortgage of 1096 and of the need for Henry's invasion of Normandy. He affords much light on the Investitures controversy, and gives a probable origin for the famous compromise. The quarrel between Henry II. and St. Thomas of Canterbury (whom Prof. Adams always calls Becket) is clearly told, and we are glad to learn exactly (p. 301) what was the result in matters of jurisdiction after the death of the primate.

The authors expressly disclaim the intention of writing the constitutional history—they confine the word "political" to its narrowest sense—yet there is much in these volumes of constitutional history, and something of other matters. Prof. Tout turns willingly for a time from the weary personal politics of Henry III.'s reign to speak of friars, of universities, and of literature, and an idea—which he repeats in several ways—that "all mediæval laws were rather enunciations of an ideal than measures which practical statesmen aimed at carrying out in detail" (III., 152) helps much to the understanding of Magna Carta, Confirmatio Cartarum, Statutes of Mortmain, of Provisors, and of Præmunire. We have noted but two small misprints, and they are easily corrected by the thoughtful reader, and there are but two criticisms we wish to make. Prof. Adams does not quite clearly distinguish the persons in speaking of Normandy in 1088 (p. 87), and by comparing two remarks on pp. 401–2 we are not sure whether he thinks the murder of Arthur advantageous to John or not. These are, however, trifles, and the books are full of useful and enlightening information. The volumes are provided with indexes and maps, and a full account of all authorities. No teacher who takes his history lessons seriously can afford to be without them.

[1] "The History of England," 1066–1216. By G. B. Adams. x.+473 pp. 1216–1377. By T. F. Tout. xxiv.+496 pp. (Longmans) 7s. 6d. net each.

A Sixteenth Century Anthology. By Arthur Symons. xvi.+468 pp. (Blackie.)—Nothing more elegant in the way of anthologies have we come across for some time, and the name of Mr. Arthur Symons is a sufficient guarantee for the excellence of the literary taste displayed in this charming volume of the "Red Letter" library. A little introductory note by the editor passes in review the chief features of that marvellous literary period with which the volume deals, and this alone is well worth perusal, for it condenses a great amount of knowledge and is admirable for its critical insight. Time and space would fail to pass in even the briefest review the actual verse selected. Suffice it to say that it is almost perfect—as perfect, possibly, as any anthology can be.

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THE HISTORY OF ANNOTATION.[1]

In this book Dr. Rutherford analyses the scholia which he has already published, and gives the result of his critical study in a series of chapters which group the material under the following heads:—(i) Scholia concerned with the transmission of the letters; (ii) Scholia concerned with the interpretation of the letters: (1) Reading aloud, (2) Interpretation determined by the poetical tropes, (3) The explaining of unfamiliar words and of matters of fact, (4) Etymology and analogy. There are also a number of excursus on various points. All this looks very learned and abstruse; and the reader who dips into the book, and notes the unconcealed contempt which is expressed for the scholiasts and their work, may perhaps lay it down as being only of antiquarian interest. He would be wrong; the book is amusing and interesting. It is amusing by reason of Dr. Rutherford's dry cynicism, as well as by many of the comments cited; it is interesting because it has a bearing on the teacher's practical work. As Dr. Rutherford points out, we are in the same danger as the ancients were for whom these notes were written. We are in danger of drowning the voice of the Greeks under a flood of comment; our self-reliance and power of thought are becoming deadened by constant reference to notes, and we have before us a warning in the fate which overtook those who earlier fell into the same slough. The vices of the modern schoolmaster are seen in the ancient, for it is possible to trace in these notes the methods of those who taught Greek literature, or professed to do so, in Greek schools, at a time when learning was divorced from life. Pedantry and stupidity, blindness to essentials and insistence on trivialities, worship of the letter and neglect of the spirit which gives life—these were the faults which killed Greek literature in the past, and will, if persisted in, kill it at this present.

The scholar's use of this book will not concern us now; suffice it to say that it is a storehouse of learning, and will be indispensable to those who have to do with the higher critical study of Greek literature. For such, it is important to know who wrote or compiled the scholia, what was their value, what allowances must be made in using their notes as evidence. We think that Dr. Rutherford, in his righteous indignation, has underrated the value of what they tell us on many points. In matters of antiquities and religious ritual, of lost legends, and of customs which were practised or remembered when they wrote, the scholiasts have much to tell us; nor are they to be despised when they tell us of the meanings of Greek words, for, be it remembered, Greek was their own language. But Dr. Rutherford looks at them from the schoolmaster's point of view, and from that point of view we also regard them. Having stated the warning which the ancients afford us, we are glad to call attention to one point in which they deserve imitation. All their teaching was based on the spoken word. Greek schoolboys did not sit silent poring over books, nor, of course, did they translate. The object of their teaching was to enable them to apprehend their author's meaning with the view of reading or reciting him aloud, musically and intelligently. This part of a child's education is now almost wholly neglected. English boys and girls cannot speak their own language well and with pleasing sound, nor do they learn to read and recite aloud habitually the authors of their own country, much less those of Greece and Rome. Indeed, many go so far as to aver that no approximation to the speech of Greece and Rome is now possible. And yet it is hardly a century since Latin, at least, was commonly regarded in schools as a speech, not as printed symbols; and in Dr. Rutherford's own school the Latin play keeps up the tradition, although the music of the language is destroyed by bad pronunciation. Now, a little care, with practice and a rational method of teaching, makes it possible to utter both Greek and Latin so as to be intelligible and pleasing to the hearer; and the habit of carefully pronouncing the sounds of these languages after the ancient manner, so far as this can be determined—and a fair approximation is possible—gives a flexibility to the organs of speech which is of use as a corrective to slipshod English.

There are other matters of less interest on which light is thrown by this book, such as the meaning and use of the various tropes, figures, and the manifold machinery of rhetoric. But enough; our space is filled, though we could say much more.

[1] "A Chapter in the History of Annotation: being Scholia Aristophanica. Vol. iii." By W. G. Rutherford. xi+494 pp. (Macmillan.) 52s. net.

THE ANNUAL EDUCATIONAL CONFERENCES.

The large number of meetings of teachers and other educationists held during the Christmas vacation makes it impossible to attempt to provide in these columns a detailed report of all of them. As in previous years, a summary of the chief points of the conferences is here provided, and in drawing it up particular attention has been directed to the interests of practical teachers. Parts of two of the papers read are reprinted elsewhere in this issue, and a few of the "Items of Interest" are devoted to comments on some of the points of special importance. In preparing some of the sections, use has been made of the reports which have appeared in the *Times*.

Physical Training.

Much attention has been directed in recent years to the necessity of educating the bodies as well as the minds of our pupils, and a prominent place was given to the subject of physical training both at the London County Council Conference of teachers and at the Newcastle-upon-Tyne meeting of the North of England Conference. In London, Colonel Malcolm Fox, inspector of physical training to the Board of Education, delivered an address on physical train-

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ing in elementary schools. He said that of all the various systems of physical culture the one that, under the test of modern physiological knowledge, stands out pre-eminently above all others is the Swedish system of Ling. It is a system which has without doubt "come to stay." The aim of Ling is to affect beneficially a whole race, and not to put more muscle on a few thousand individuals; his object is to create a race of men and women healthy alike in body and in mind. Ling's system is a pure matter of most elementary mechanics, and Colonel Fox is anxious to see it seriously adopted throughout this country. The general adoption of the system would, Colonel Fox thinks, produce in a few years a most striking change in the appearance, health, and morals of the rising generation. The question of the provision of efficient instructors is the weak spot. So far as women specialists are concerned, owing to many excellent physical training colleges for lady teachers, the want can be met · but there is no doubt that we are totally lacking in expert male instructors in this country, a deficiency which will become more apparent as the desire for the adoption of the new system by county educational authorities increases. Among the results which would accrue from the establishment of an institution for the training of male instructors, and the consequent supply of expert male teachers, would be (1) the training of students in training colleges both in theory and practice; (2) the training, where necessary, of teachers at present serving in the schools; (3) the thorough training of pupil teachers; (4) the training of pupils at secondary schools; and (5) the training at evening continuation schools of that body of youths who fail to be attracted in any numbers by classes in scholastic subjects, but to many of whom physical training strongly appeals. The Swedish system of "educational gymnastics" is designed with the view of improving the health and the acquirement of virile mental qualities, and is being adopted by countries where the old form of gymnastics has been brought to a far higher plane than we have ever reached. The exercises are so gentle and so gradual as to be suitable to both sexes and to all ages. Physical training, Colonel Fox maintains, is a complement to, not a substitute for, games.

Sir Lauder Brunton presided over an afternoon meeting of the London Conference dealing with the same subject, and in the course of an address said that whenever men start a scheme the chances are that they do so in the wrong way, and this is the case with education. It was not until quite recently that we began to realise that neither moral nor intellectual education is quite the thing apart from physical education; morals and intellect depend to a great extent upon the condition of the body. In order to train the whole man there must not only be physical exercises for the muscles, but also co-ordinated exercises to train the nerve centres. If the child can be trained by play, so that the idea of exercise is connected in its mind not with something it is forced to do, but with something which will give it a source of enjoyment, it will go on through life doing exercises under all sorts of conditions. None of the organs of the body must be damaged by over-exercise. It is absolutely necessary that there should be organised medical inspection, and Sir Lauder Brunton considers that it would be quite possible to train teachers with very little trouble to recognise the signs of danger from over-exercise.

Dr. Kerr, medical adviser (education) of the London County Council, gave an address on "The Position of Physical Exercises in the Infant Department of the Elementary School."

The subject of physical training in schools was discussed also at the North of England Conference. Prof. Thomas Oliver contributed the chief paper on the subject, and we are glad to be able to reproduce the greater part of it in the present issue. Captain Worsley-Gough also read a paper on the same subject, in which he laid especial stress on the value of military drill in school.

Inspection of Schools.

The first day of the annual Headmasters' Conference was devoted almost entirely to a discussion of the various aspects of the inspection of schools. The following resolutions were adopted:—

(i) That the conference, considering the intimate relations that exist between the schools here represented and the Universities, and being of opinion that it is of the greatest importance that alternative forms of inspection should be left open to the governing bodies of secondary schools, approves the action of the Board of Education in entrusting University bodies with the work of inspection.

(ii) That in the conduct of inspections the conference thinks it of the utmost importance that the reports of inspectors—communicated to governing bodies and headmasters—should be treated by the inspecting board as strictly confidential, and that the judgments of the board itself should be deliberate and collective.

(iii) That the conference desires to emphasise the principle that inspection should take into due consideration the aims and circumstances of the school inspected, and regard intellectual methods and results as of greater weight than material equipment and appliances.

(iv) That, as the purpose of inspection differs from that of examination, inspections should be conducted at such intervals of time as will best secure reality and thoroughness, and prevent waste of time, energy, and expenditure.

(v) That the conference has received with satisfaction the intimation of the Army Council that inspection of approved schools will not take place more often than every five years, except in cases where the inspecting body recommends, or the War Office expressly requires, inspection after a shorter term. And that it be an instruction to the committee of the conference to hold further communications with the War Office on the subject of the publication of lists of schools which submit to inspection; but that this conference demurs to the publication by the Army Council of an official list of schools which have signified their willingness to accept inspection.

This subject was considered also at the annual meeting of the Incorporated Association of Headmasters. After some discussion the following resolution was adopted:—That this association reaffirms its conviction that a system of school certificates should be established by University authorities acting under a board of control, and its regret that there is as yet no adequate decrease in the number of examinations for entrance into professions.

The Teaching of English.

At the third meeting of the conference of London teachers the teaching of English was discussed. Mr. P. J. Hartog, academic registrar in the University of London, delivered an address on this subject. The question of training in the mother tongue is, he said, to a large extent identical with the question of thought-training. This training should have two objects in view—namely, the development of the power of clear expression, and the development of mental initiative. The French system, which Mr. Hartog has investigated in France, is excellent in many ways, but it is still too purely literary, too little in touch with everyday life, and too little concerned with the actual experience of the pupils who are trained to write. Like M. Payot, who has written most valuable articles on the subject, Mr. Hartog rejects

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entirely the system of correcting in writing mistakes not dealt with in class; such correction he regards as a shocking waste of the teacher's energy and time. The chief attention of the class should be directed to common-sense criticisms of substance and construction, not to questions of grammar. If the child takes care of the sense, the sentence takes care of itself. There is at the present day much unconscious teaching of English in the schools, much unconscious training of thought by examinations. Examinations should be reformed and rationalised so as to serve only as the tests and no longer as the guides of education. The examination room, Mr. Hartog said, definitely trains a boy in the art of being unintelligible to a person previously unacquainted with a subject on which he has to express himself. It is largely the result of this topsy-turvy training that English boys are in fact unable to express themselves. Examinations also tend to sterilise mental initiative. The individual faculties of each child should be developed for the sake of the nation and also because he is an individual. It is a personal duty and a national duty for all teachers to look to it that no child has his mental initiative crushed by the Juggernaut of a misconceived educational system.

Reformed Teaching of Greek.

An important part of the work at the meeting of the Classical Association was the consideration of the interim report of a committee nominated to consider in what respects the present school curriculum in Latin and Greek could be lightened and the means of instruction improved. The committee obtained information from 37 boys' schools and 19 girls' schools as to the amount of time at present devoted to classical subjects and the distribution of that time. As regards boys' schools, the returns show that in the highest form on the classical side in the larger public schools a considerable amount of specialisation is allowed to many boys. In the other forms the time devoted to Greek and Latin together generally amounts to about one-half of the whole number of school hours. In the smaller public schools there is less specialisation in the highest form. The proportion of time given in school to classics increases from somewhat less than one-third in the lowest form in which both Greek and Latin are studied to slightly less than two-thirds in the highest form. As regarded girls' schools, in first-grade day-schools with a morning session only, Latin has usually about one-sixth of the total time allotted to it until the highest form is reached. In schools with morning and afternoon sessions from one to three hours a week is gained for the study of Latin, as compared with schools with a morning session only. First-grade boarding-schools give more than twice as much time to the study of Latin as do first-grade day-schools with a morning session only. In all these schools the ordinary course allows for specialisation by some elder girls preparing for the Universities. The committee considers that, in view of the legitimate claims of other subjects, the amount of time devoted to the classics on the classical side of boys' public schools is as great as can reasonably be expected; but it believes that time and effort may be saved and better results obtained by certain changes in the method of teaching Greek. The system of classical teaching in most schools seems to be directed towards the ultimate production of a certain number of finished scholars both in Latin and in Greek, educated for the most part on linguistic lines—*i.e.*, with special attention to grammar and composition. But while it is right that elementary Latin should be studied partly (though not exclusively) as a linguistic discipline, the committee thinks it unnecessary and undesirable in the case of the average boy to apply precisely this method of teaching to Greek also. The education in Greek of the average boy should be directed to the reading and appreciation of Greek authors, together with such study of grammar and simple exercises in writing Greek as may be desirable as a means to that end. The time saved from grammar and composition should also make it possible to aim generally at a better understanding of the life and history of the ancient world. The committee does not think its recommendations need involve any lowering of the standard of pure scholarship in the highest forms of schools. Time can be found in such forms for the study of the minutiæ of accidence and syntax and the practice of the higher kinds of composition. The amount of time available for the study of Latin in girls' schools is usually small, and the aim of the teaching seems to be directed towards acquiring facility in translation. Greek is taught on the same lines. In view of the restrictions of time, the committee thinks the teachers right both in limiting their aim and in making that aim the reading of the classics. The committee recommended the association to adopt the following resolutions:—(1) That in the lower and middle forms of boys' public schools, whereas Latin should be taught with a view to the correct writing of the language as well as to the intelligent reading of Latin authors, Greek should be taught only with a view to the intelligent reading of Greek authors. (2) That the association petition the Universities of Oxford and Cambridge to take into consideration the abolition of the separate Greek grammar paper at Responsions and the Previous examination respectively, and the substitution for it of an easy paper in unprepared translation.

The first resolution, with all the words relating to Latin omitted, was adopted by the association. The second resolution was carried with one dissentient.

The Incorporated Association of Headmasters at their annual meeting passed a resolution affirming that this association welcomes the efforts of the Classical Association of England and Wales towards maintaining classical education in secondary schools and improving its methods.

The Teaching of Mathematics.

Prof. R. A. Sampson, F.R.S., delivered an address on the teaching of elementary mathematics. He deliberately confined his attention to generalisations. The advice he gave to teachers may be gathered from the following quotation from his remarks:—

"Adopt the rule to shun empiricism, unless it is forced upon you, and to face fairly and fully each logical difficulty that arises, and beyond this the whole difficulty is a question of drawing the line. Where the line should be drawn, what retained and what excluded, is a matter upon which I suppose every mathematical teacher who has the liberty is engaged at the present time in experimenting for himself. That one hard and fast line should be drawn, or one universal text-book adopted as the outcome, would be, in my opinion, most regrettable. Every autumn new text-books descend upon us like the falling leaf, and somehow disappear and are swallowed up with the rest of Nature's *exuviae* before next year.

'Eines schickt sich nicht für alle:
Sehe jeder wie er gehet,
Sehe jeder wo er stehet,
Und wer steht, dass er nicht falle.'

Each book represents some attempt to crystallise experience. But I would put it to you that the reform of geometry has in some respects overshot its mark, and that boys trained upon some of the text-books of extreme simplicity—valuable as these are as suggestions—have had a

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more meagre training than the old pedantic Euclids supplied, and are not a bit better able to apply their knowledge to a problem."

THE TRAINING OF PUPIL-TEACHERS.

This subject was considered both at the annual meeting of the Headmasters' Association and at the North of England Conference. The headmasters passed a resolution affirming that intending pupil-teachers should, as far as possible, enter secondary schools not later than the age of twelve years if not already attending such schools, and remain there until the age of sixteen, and then attend a secondary school as half-timers.

At the Newcastle Conference, Miss Gardiner, of the Carlisle High School, read a paper which is printed elsewhere. Mr. A. J. Arnold, of Sheffield, maintained in an interesting paper that, speaking generally, the good work of the pupil-teacher centres has not been equalled by any other schools. They provide the cheapest form of secondary education. The main evil is said to be segregation; but this segregation was defended by Mr. Arnold on the ground of efficiency. It is urged that there is no corporate life at these places, and that the centre student is a narrow-minded, grey person. Mr. Arnold's inquiries show that the corporate life is very strong. Boys have their cricket, football, and swimming clubs, the girls their cricket, hockey, swimming, gardening, cycling, rambling, and glee clubs, a dramatic society, and a needlework guild. The girls are in great request at bazaars and concerts, and many of the pupil-teachers are active church, chapel, and Sunday-school workers. The centre student is a very bright and cheery person. She may be lacking in some little matters, but how can it be expected that children drawn for the main part from homes of limited culture can hold their own in all the minor graces of life with girls of a different social grade? They have their own social conventions. They work hard and play hard; and if all the youth of England were as much in earnest as centre students, we should read less and hear less about the flippancy that is sapping our old-time national solidity and blighting our national righteousness.

TRADE SCHOOLS.

The concluding day of the London conference of teachers was devoted to a discussion on various kinds of trade schools.

Mr. Shadrach Hicks, principal of the London County Council Shoreditch Technical Institute, delivered an address on the need for and function of the trade school. He said that one of the most conspicuous changes which has taken place during the last thirty years is the relation of master and apprentice in connection with the teaching and learning of the various crafts practised in this country. The old apprenticeship system has practically gone, and no adequate substitute has taken its place. The unindentured youths of the East-end of London, for instance, are left to pick up their trades as best they can, and the majority of them, who are professed wood-workers, have absolutely no knowledge of the principles which underlie their work. What we are now experiencing in England, in connection with the question of the efficient training of young people to enter the various arts and crafts, has been experienced in Germany, Russia, America, France, Austria, Switzerland, and most civilised countries. In many cases the conditions have been brought about by the same causes, and in most instances most praiseworthy attempts have been made by the educational authorities of those countries to cope with the glaring deficiency in their systems of education. Trade schools in the broad sense have been established in Russia for many years; they are spread over Germany and Austria, are fostered in France and Switzerland, and have found a substitute in the great manual training schools and technical institutes of America. Every country has done what has appeared to be the best thing when local and natural conditions have been taken into account; and while it is of distinct advantage to know the purpose and organisation of such schools abroad, British education ought not to bow down and worship and slavishly imitate any or all of them. The greatest caution and foresight must be exercised by educational authorities in setting up secondary schools of a technical type which stand midway between the elementary schools and the high-grade polytechnics. The trade school should exist for education in its best sense; its instruction should be directed towards making thoughtful men and women. Then the trade school should seek so to train its scholars as to make them versatile and able to adapt themselves to varying circumstances, and in order to do this its training should be flexible and not rigid; it should not specialise children in a particular trade too early, but should rather prepare them to enter with intelligence and skill upon any one of a group of trades or upon work associated with them. A very material portion of the time of the trade school should be devoted to the study and practice of art, the training of the eye and the hand. Finally, the trade school should be in close and intimate connection with the employers of labour, always bearing in mind, however, that at school at least children have rights which must not be violated by moulding them in one particular groove.

Dr. Walmsley, principal of the Northampton Institute, opened the discussion, and observed that the great problem is that of inducing parents to forgo the immediate pecuniary advantage which boys derive from employment on leaving school, for the purpose of getting them trained for skilled labour which would be more useful in their future lives.

MODERN LANGUAGES.

The Modern Language Association discussed a variety of subjects at its annual general meeting. Among questions more directly concerning methods of teaching was that of the use and abuse of conversation in teaching French and German. Mr. F. B. Kirkman summed up the letters on this subject published in *Modern Language Teaching*. He said that as a means or method of instruction conversation is of supreme importance. For a moderate facility in the use of a language two things are essential, namely, a rich vocabulary and a good store of idioms, and familiarity with inflexion and construction. The oral method has a supreme value as a means to this end, because it gives a maximum of practice in a minimum of time, and it also teaches spelling. The reformed method has shown that it is capable of being applied in the teaching of grammar. The object of teaching grammar is to put the pupil at any given moment in a position to use an inflexion or a construction without conscious effort and without having to think of a rule or an exception. The oral method is the only one which will succeed in doing this. Mr. Kirkman also dealt with the question of the complaints which are made against the reformed method. A great deal of the work is disgracefully slipshod; but the reason is, that the way of using the oral method sufficiently and systematically has not been found out. Candidates who start with the reformed method from the beginning have never been sent to examinations in any large quantity. A great deal of the slipshod work will disappear when the candidates are, for the most part, persons who have been taught on the reformed method from the start. The real problem is, how to secure the conditions which will make

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it possible to deal with the modern language instruction in a thorough and systematic way. One difficulty in the way is the existence of two sorts of teachers. One is the modern language specialist, who is very well up in his philology, but whose notions of the reformed method are very rudimentary; and the other sort is the scholar who does not profess to know anything about the language he has to teach. It is merely a matter of common sense that the instruction must be in efficient hands before the reformed method can be applied. It is often found that one class is doing translation and another class is doing exercises in the grammar, and there is no organic connection between the two.

A paper on the form-master system in public schools in relation to modern language teaching was read by Mr. D. L. Savory, of Goldsmiths' College, New Cross. He said the stock argument in favour of the form system is that it enables the master to be acquainted with the character of each individual member of the form; but it will not hold water. There is no more continuity in a substance divided into longitudinal sections than in one divided vertically. To inspire and stimulate the pupil, the teacher must himself be inspired by love of and belief in the subject he teaches, but few, if any, teachers can feel this enthusiasm for half a dozen different subjects. There is more force in another objection—the narrowing influence on the teacher. This applies especially to the mathematician, and, least of all, to one who has so wide a range as modern languages afford. Nothing can be worse than the present practice of entrusting French to classical-form masters who despise a language they do not understand.

PHYSICAL TRAINING.[1]

By Prof. THOMAS OLIVER, M.A., M.D., LL.D.
Professor of Physiology, College of Medicine, Newcastle-upon-Tyne.

WHAT is sought to be attained by physical training is the full development of the whole body and the powers of the body—in a word, all its functions, physical and mental. There is abundant evidence to show that such a result follows. What work and the intermittent wielding of the hammer do for the blacksmith's arm, physical exercise similarly accomplishes for the muscles of children. Muscle grows by usage. It is estimated that the muscular system can accommodate one-fourth of the total blood of the body; but since muscles only operate in conjunction with the nervous system, there can be no improvement of the one without corresponding improvement of the other. Nature has so arranged matters that during the contraction of a muscle a larger quantity of blood is sent to that muscle, not only at the time that its activity is greatest, but in order to wash out the waste products that have been formed, and to allow of the muscular fibre becoming invigorated and structurally renewed.

The good results of physical training are seen in the improvement of the individual all round; he not only becomes healthier, but his will stronger and his intelligence greater. When we influence for good the muscles of our body, we at the same time improve the nutrition of the brain and nervous system. Just as in the higher life the influence of a generous deed is never lost, or in psychology no thought is ever altogether annihilated, so in physiology no muscular movement of the body takes place without the same being registered in the brain and spinal cord. The brain gives back to the outer world what it receives from it through the intermediation of the senses. In physical training must be included every movement, from the feeblest muscular contraction to the complicated movements seen in the gymnasium. There is a constant stream of sensory impressions upwards from the muscles to the central nervous system, wherein is not only registered the memory of muscular movement, but is laid down the mechanism for more complicated movements in the future. When through accident or illness in the infant these ingoing or sensory tracts become affected, an imperfectly developed brain is the result. There is the closest interaction between muscle and brain; and while in one sense the brain directs the work done by muscle and controls its nutrition, we must also admit, on the other hand, that muscular movement directs the development of the large motor cells of the brain, upon the structural excellence and integrity of which all volitional acts depend.

No better proof could be given of the influence exercised indirectly by muscle upon the developing brain than the anatomical changes met with in that organ in young animals and in man as a consequence of the amputation of a limb. There are certain parts of the surface of the brain in the higher animals—*e.g.* the dog and the monkey—which, when electrically stimulated, are followed by movements of particular muscles and never by movement of any others. We speak of these parts of the brain as "motor areas." They contain groups of large nerve-cells shaped like the head of an arrow, and these when stimulated give rise to muscular movement. In volitional acts these nerve cells are in some way or another excited and emit impulses which throw the muscles into contraction. What experimental physiology has demonstrated as capable of occurring in the brain of the higher animals, disease and clinical observation have confirmed in man. It has been found when the forelimb, for example, of a young animal has been amputated and the brain is examined several months after the operation, that the motor area of the brain on the opposite side to the amputated limb has not developed, but, on the contrary, has shrunk; and a similar condition has been noticed in man when amputation of a limb, say the arm, has been performed in childhood. It is more than probable that shortly after birth there are laid down in an immature form all the arrow-headed cells in the motor areas of the brain that are likely ever to be created. The manner in which these cells develop, and the connections they form with other cells in the brain, are largely the result of ingoing impressions to the brain from the skin and muscles. When these are no longer carried inwards, owing to the removal of a limb, the motor area of the brain, which in ordinary circumstances would have grown and would ultimately have innervated muscles and directed their movements, does not develop. No stronger argument could be brought forward to show how physical exercises assist the development of the brain than the facts I have just mentioned.

If another illustration were needed to demonstrate how muscular movements actually bring about the localisation of important functions in the brain, it is to be found in speech. It is unnecessary for me to do more than remind this audience that cross action is characteristic of the brain and the movements of the limbs. In other words, the right side of the brain innervates the left side of the body. It is owing to the more frequent use of the muscles of the right hand, and especially the finer movements of the muscles of the hand, that the nerve cells which regulate and control the motor mechanism of speech come to be

[1] From an address delivered at the North of England Conference, Newcastle-on-Tyne, January 6, 1906.

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located in the left side of the brain, and in a similar way the graphic centre, or that which superintends the movements concerned in writing. Surely, then, since muscular movements play this all-important part in the early development of the brain, it is only proper that these muscular movements should be free, spontaneous, and unrestricted. It is only, however, in right-handed persons that the centre for speech is located in the left side of the brain; and as language is the medium of the communication of ideas between man and man, it is more than probable that intellectual functions are more closely associated with states of activity of the left than of the right side of the brain. In the left-handed man speech is located in the right side of the brain. Since, then, the use of the muscles of either arm determines the localisation of such a function as that of speech in one side of the brain, what becomes of the other half? Occasionally it is found that when disease affects one half of the brain, the other half can be, to some extent, educated partly by the muscular movement of the non-affected arm.

This circumstance naturally raises the question as to how far children should not be taught to use indiscriminately the muscles of both arms, and thus through ambidexterity assist the development of the two sides of the brain equally, and not of one side only as occurs in single-handedness. It would almost appear as if man by his interference and deference to social custom had succeeded in restricting the area of future activities in the brain. Ambidexterity can widen these. The use of both hands in children should be therefore encouraged, for experience has shown that there is no enfeeblement, but a strengthening, of the mental powers in consequence.

To the question, What are the best physical exercises for the very young? I have no hesitation in replying, The playing of games. In early childhood, games, owing to their spontaneity and the complete freedom of all the muscular movements involved, are far and away superior to any physical drill or set exercises. Although in no way detracting from the influence for good of the purer air that is breathed, there is not the least doubt that in the fairly long walk to and from school, the companionship by the way, the opportunities for running, and the incidental excitements on the road, is to be found an explanation of the healthier body, the greater stature, and superior weight of the country-bred child compared with the child of the city. It is out of unrestrained and rapid muscular movements, not made to beat to time and responsive to the commands of a teacher, and therefore requiring attention on the part of the nervous system, that the sensory motor areas of the brain are developed. What can be more futile, therefore, than parents sending children of from three to four years of age to school to remain passive on a seat in a class-room when they should be like young animals playing about and exercising their muscles? I lay stress upon the necessity of rapid muscular movements, for if we watch a little child who has learned to walk and has had for months the use of his legs, we almost always find that if he wishes to go a short distance, say, from one room to another, he nearly always runs; if he cannot run, but crawl, then he crawls with amazing rapidity. With the young child, as with the young animal, at play, the movements are quick owing to the overflow of nerve energy. Thus it is that, in consequence of these muscular movements rapidly repeated, actions learned at first laboriously are, so to speak, registered in the ganglia of the mid-brain, where in consequence of their oft-repetition they become so stereotyped into the nerve cells and their connections that in process of time such movements as walking cease to come within the sphere of consciousness, and that it only requires impressions from the periphery of the body to reach these nerve centres for the most complicated and co-ordinated muscular movements to be carried out.

It is because the marking of time in physical drill requires attention on the part of the child that the responsive muscular movements are too mechanical and rhythmical. For very young children such mechanical exercises cannot take the place of games. When watching children set off to march out of school, always commencing with the same foot and beating time to each step by the inclination of their head, Dr. Foggin has found a few of the children walk with a slight limp, as if they were the subjects of commencing hip-joint disease or of caries of the spine. What is required at this early age, so far as muscular movements are concerned, is a total *abandon* on the part of the child. Concentration of the attention as to this or that muscular movement is less likely to lead to such a proper development of brain as occurs when the movements are free and spontaneous: hence my plea for play and games for young children, and the expression of regret that in those crowded parts of our large cities inhabited by the working classes, and where the child population is greatest, there is such a lack of opportunity for games owing to the absence of playgrounds.

Desirable as public parks are, and admittedly a boon to a town, still, they are often too far away for children living in the centre of a town to go to, and in some instances no part of the park is set aside for children to romp in. Playgrounds around schools should be larger than they are, and now that to municipalities has been entrusted the education of children, these public bodies have it in their power to bestow lasting benefits upon children, and the nation at large, by providing out of the funds playgrounds for children quite apart from those attached to schools. Municipal playgrounds should not be all asphalted, for asphalted courts are a source of many a broken bone even to young children. They should be as large and airy as circumstances will permit, and should have a belt of trees surrounding them, for trees when in leaf are the vitalisers of cities through the liberation of oxygen from the carbonic acid of the atmosphere. In speaking of playgrounds provided by town councils, I mean places where children may play after school hours and in holidays. Covered-in spaces should form part of the school buildings, so that in inclement weather games might be indulged in. When the weather is fine I would favour more frequent opportunities being given by teachers for play between classes, also that the playgrounds should be so arranged that the younger children can have a part assigned to themselves. Here all sorts of games should be allowed, such as running, hopping, skipping, &c. Games may be supplemented by physical exercises in a large room at the school separated from the class-rooms where the children have been sitting, and this room should be freely ventilated.

In putting into operation at a school any plan of physical exercises and physical training, discrimination should be made between child and child. It is unfair to expect an ill-nourished and poorly-fed child to go through lengthened physical training as easily as a healthy-looking, well-fed child. The fatigue may be too much for him. In addition to, or perhaps as the cause of, the enfeebled constitution, there may be some defect of his heart or lungs. This remark opens up the question of medical inspection. It is a debatable point as to how far games and physical exercises, and the harder physical training of the gymna-

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sium, should be made compulsory. Usually when a child shows distaste for or disinclination to join in games, the cause is to be found in his want of robust health, and therein lies the advisability of medical officers to schools seeing the children occasionally at play. Careful physical training is almost as valuable to children as education itself, for without health education is of little value.

The object of physical training is to correct as well as to develop. It should aim, therefore, at correcting faulty positions assumed by the scholar, especially when writing, and should encourage proper breathing by chest exercises. It is unnecessary for me to give in detail the various forms of physical exercises and the types of physical training for particular ages. All I can say is that for the younger children play, games, and the milder forms of physical exercises are enough. Experience shows us that for some reason or other the muscles of the body do not take on training or harden under exercise until after the age of twelve or thirteen. This knowledge, therefore, must be our guide as to what should be allowed and what refused. After the age of twelve, boys and girls may indulge in athletic sports. For young children such violent forms of exercise as are seen in the gymnasium would be too severe, and that is why for very young children football is undesirable. After the age of thirteen the muscles can add to their energy, hence athletics and active games are at this age and afterwards the most useful forms of exercise. I need scarcely enumerate the outdoor sports and exercises in which youths of fourteen and beyond it may take part. There is no reason why in this country every healthy young man should not be taught how to carry and use the rifle. Lord Roberts has given us a warning we should do well to give attention to. As regards indoor exercises, I cannot speak too highly of boxing and swimming. In boxing, nearly all the muscles of the body are put in action, the eye is trained, and there are developed an alacrity of the nervous system and a self-confidence on the part of the individual which are helpful in later years. As to the advisability of swimming, there can be no question; but municipalities should provide swimming-baths specially for school children, and not send the children in a body to the baths frequented and supported by the townspeople and their families. The water in the baths should be changed daily, and schools allowed the use of the baths in turns. The art of swimming should be taught by teachers who are sympathetic and capable.

Like everything else, physical training has its limits. Excessive physical training is not only undesirable, it is ruinous to the individual. Safety lies in hitting the happy medium. It is a fortunate circumstance when at a comparatively early date young men and women realise that life is not all play, that work need not be drudgery, and that whatever work be undertaken they should throw themselves into it heart and soul. Whatever of real joy play is to the young child, so ought well-regulated and healthy work be to the grown-up man and woman.

It is well that now and again in the course of our national life a halt should be cried, and that we should take stock so as to review the question of the physical fitness of the people. Let us by all the agencies at our command bring to bear upon boys and girls, but especially upon the young men and women of our day—the possible parents of the future—all the influences we can to show them the incalculable advantages to themselves, and to those who will follow them, of physical training and a knowledge and observance of the laws of hygiene; of how a sound body and a healthy nervous system are the correlatives of each other, and that, whatever may be the advantages conferred by the highest education, these are practically lost to the individual if he has not good health to utilise them. Towards this end I commend to your careful consideration the objects of the National Physical League.

THE PUPIL-TEACHER ELEMENT IN SECONDARY SCHOOLS.[1]

By S. A. Gardiner,
High School for Girls, Carlisle.

There are a number of initial difficulties, and some permanent ones, in connection with the introduction of pupil-teachers into secondary schools. In my own case I had a high school of about seventy pupils, and in the spring term of 1905 about fifty pupil-teachers were sent to me. I use the term pupil-teacher to include probationer. Before these girls came I imagined they could work, to a great extent, with the ordinary school-girls, but after examination I found this impossible, for the following reasons:—

(1) The majority had learnt no foreign language, no mathematics, no science, and no drawing; so that the only subjects they had in common with girls of their age were English and arithmetic, and the method by which they had studied English was very different from that used in most secondary schools.

(2) These girls varied in age from fourteen to twenty, so that, had they been put into forms corresponding to their ages, they would have been in the majority; and would have given the tone to the form, instead of taking their tone from the form.

(3) The majority of these girls do not come from such cultured homes as the other girls in the school, and this affects the question from two points of view: (*a*) that of the pupil-teachers; (*b*) that of the parents of the ordinary pupils.

(*a*) The pupil-teachers run the risk of being laughed at because they do not know the ordinary usages of a secondary school.

(*b*) I consider that any school which is taking pupil-teachers owes it to the parents of the ordinary pupils to be very careful to keep up the standard of manners, of right feeling—in short, to keep up a good tone in the school.

Another difficulty that I had to deal with, but which would not be the case everywhere, was that of making arrangements for feeding and supervising the pupil-teachers out of regular school hours. I take the county pupil-teachers, so that the majority come in by train. There are seven lines running into Carlisle, and there are in consequence at least seven different times of arrival, seven different times of departure. I consider it essential in the case of girls that they should be in the charge of the school from the time they arrive until it is time for them to go to their trains.

I have previously given my reasons for not putting the pupil-teachers into the ordinary forms at once. I examined them all, and divided them into two classes. All who were to take the King's Scholarship examination in 1905 or 1906 were put into the upper class, and in addition those girls who by their entrance examination seemed the most capable; the remainder were left in the lower class with the probationers. In the upper class we began science, and either French or mathematics.

[1] From a paper read at the North of England Conference held at Newcastle-on-Tyne in January.

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Those who had learnt French before joined one of the ordinary school French classes, and in the case of arithmetic the pupil-teachers were re-divided, and some were put in the ordinary school division; so also with algebra. In the lower class we began algebra only the first term, and the second term we started French, also with the better girls in the form. For a good many subjects the lower form works in two divisions.

The question now arises: Though at the beginning it was necessary to separate the pupil-teachers, is it necessary to continue this when the present set has finished the King's Scholarship examination in April? Cannot the next set be put into an ordinary form? The girls have already been a year at the school.

This at once raises the question of examinations. If they are to be prepared for the "Preliminary examination for the Certificate," the answer must be "No." Our Upper V. is doing the work of the Senior Oxford. Why, then, should these girls not be prepared for the Senior Oxford? After weighing the pros and cons, I have decided that it is better for the majority to take the Preliminary examination for the Certificate rather than the Oxford examination. Now, unfortunately, many girls with poor mental capacity have been admitted as pupil-teachers, and as the majority come from homes where there is little or no mental culture, there seems less risk in sending them in for an examination in which they will be pitted against others of the same character. At the same time, the examination gives possibilities of distinction, and thus of differentiating between the better and the worse candidates.

Whether this must be so permanently depends on the age of the children when sent to the secondary school; the girls who enter with minor scholarships at twelve or thirteen fit into the ordinary forms, and are indistinguishable from the ordinary pupils. If necessary, they can take the Senior Oxford at a suitable age. It is, I believe, thought possible that more children drawn from secondary schools will become primary school teachers, and if this were the case, it would be a great pity if they had to leave their own schools and go to an isolated centre; and, in the same way, if the primary school children can only enter the secondary school younger and stay to the end of the pupil-teacher period, the school can obviously have a much greater effect than if they enter at sixteen.

The question will be asked: "Under the present conditions, has it been any advantage to the girls to be in the school?" I have no hesitation in answering: "Yes; to the majority it has been a gain." I feel how little has been accomplished, and yet I may say that many have developed during the year. Our great difficulty is to make them think for themselves; they are far too ready to trust to their memories: but, after all, that is the difficulty in every school—the difficulty of making the children think.

One effect of the school-life has been that the pupil-teachers are again girls; they did not know how to play when they came—some never will—but many now run about the playground quite naturally. I have in my mind one girl in particular, who has grown at least ten years younger since coming to school. She might have been taken for thirty when she came; she was really eighteen, and now she is approximating to her real age. I am sorry to say that very few have cared to join in the hockey; those who do, of course, play with the other girls in the school, and two of our pupil-teachers are in our hockey team.

Another advantage is that though each form has a form-mistress, who teaches in it a great deal, and so knows her girls intimately, yet they have specialists for some subjects; for instance, these girls are taught science by a science specialist, drill by a specially trained mistress, and so on. Then, again, I consider it is an advantage for the form-mistresses of the pupil-teachers' forms to teach in the other part of the school; it gives more variety for the teacher, and, this being an advantage to the teacher, reacts on the girls.

One great objection that is made to having a pupil-teacher centre attached to a secondary school, even if the pupil-teachers are able to work for the same examinations as the other pupils in the school, is the difficulty of part-time scholars working with full-time scholars. This is a very great difficulty, but not, I think, insuperable. Obviously, the part-time pupils cannot take so many subjects as the full-time pupils, and it is a matter of arrangement of the time-table.

As regards the time-table, I think we have to be very careful to differentiate between the pupils sent to us. Some are capable of taking many subjects, but many are not. Theoretically, I should say it is good for a girl to learn French, but when I consider the material I have, I know it is far better for many not to take the subject. To teach a girl French who cannot write even fair English is worse than useless; the time should be spent in English lessons.

I cannot think it is for the future good of the children in elementary schools that so many girls are allowed to begin their training who are capable of so little mental development.

Such splendid work is being done by elementary school teachers that I cannot believe that the good teachers approve of such a low standard as the qualifying examination for pupil-teachers. The King's Scholarship is to be superseded by the Preliminary examination for the Certificate, in which the necessity for good English is increased. More English history is required, the European history is a new subject, the English literature is far more general in character, and so needs more capability on the part of the examinee; this must surely imply that pupil-teachers must not be recognised until they have some power of expressing themselves in their own language; if this is so, it makes the question of working in a secondary school easier to deal with. I have laid stress on the weaker girls, because it is they who make the difficulties, but I cannot close my paper without bearing my testimony to the work that has been done by the teachers of many of the girls who have been sent to me. The majority of my girls had been taught individually by their schoolmasters, though some had come into Carlisle on Saturdays as well. It is dreadful to think of the strain on the head teachers, who, in addition to their ordinary school work, had to prepare girls for examination in history, in English, in arithmetic, in music, and possibly in science and in French or mathematics, and in some other subjects.

To sum up, our fifty pupil-teachers are, on the whole, very nice girls, pleasant to do with, pleasant to teach. We feel if they had come to us younger we could have done more with them. Roughly speaking, they have no desire for knowledge—only a keen desire to pass the King's Scholarship examination, and that is the end and aim of all. We have found it most difficult to get them to take interest in any subject which is not wanted for their particular examination. To speak of events which happened in 1604, when the history syllabus ends at 1603, is, in their eyes, sheer waste of time, and the teacher should know better. For the most part, they are extremely self-satisfied, and quite unconscious of their own limitations. It has not been possible this year for the secondary schools to do as much as they may be able to do in the future, on account of the following difficulties:—

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(1) The sudden influx of large numbers, owing to the fact that at the beginning probationers and pupil-teachers in the first, second, and third years of their engagements came together.

(2) The age at which the majority of the pupil-teachers were sent.

(3) The insufficient education of many children admitted as pupil-teachers.

(4) The system of part-time.

There are several advantages which these girls gain in a secondary school :—

(1) In all except the large towns it is only the combination of a secondary school and a pupil-teacher centre that makes it possible to employ a large staff, and thus to obtain the services of specialist teachers.

(2) The fact of mixing with girls who have very varied futures before them helps the pupil-teachers to look on knowledge, not only as a marketable commodity, but as of value to all.

(3) The fact that the pupil-teachers are not the highest girls in the school, but that there are others doing work of a higher standard, may help some of them to desire more than the amcunt actually required for their examination.

It will be a real advantage to these girls if we can make them understand that we want to educate them, not merely to teach them—that we want to give them a larger, a wider view of life. We want to make them realise that it is the formation of character, the attainment of knowledge, not the accumulation of facts, which is of so much importance. What we have to do first is to make these girls desire knowledge. These are the ideals of all teachers, but I think that the mere fact of mixing with those who have different aims in life makes it more possible to reach forward to these ideals.

HISTORY AND CURRENT EVENTS.

The late Donald Cameron of Lochiel was a Jacobite, and Groom-in-Waiting to Queen Victoria from 1874 to 1880. In the obituary notices of this Highland chief, some reminiscences of his concerning the late Queen are given. According to him, she too was a thorough Jacobite, took the keenest interest in Prince Charlie and his adventures, and allowed the Duke of Cumberland's statue at Windsor to be overgrown with weeds. Naturally! Did not her grandfather erect a monument in St. Peter's at Rome to "James III., Charles III., and Henry IX."? Was not the personal allegiance which the Highlanders had held towards the Stuarts transferred after 1746 to the Hanoverian family? Were they not—Lord Bute and others—the keenest of the party known as "King's friends" who helped George III. to overthrow the Whig oligarchy and reintroduce personal monarchy in England, until George III. was often compared to Charles I.? Queen Victoria was born before the Reform Bills of 1832 were passed, and came to the throne only five years afterwards. It was a long time before the full significance of that revolution was realised, and Victoria was trained, even as her grandfather, to "be a queen." Of course she was Jacobite.

"In the old days the highway of commerce, whether by water or by a road on land, was open to all; it belonged to the public, and the trade along it was free. At present the railway is this highway, and we must do our best to see that it is kept open to all on equal terms." So says President Roosevelt in his recent message to Congress. *Was* road or river "open to all"? They were so probably in their natural uncivilised state. But when, with the advance of trade, it was found necessary to improve them, to canalise rivers and to "make" roads, these undertakings were managed by private enterprise, and the improvers charged tolls on those who used the improvements. Canals still charge, and turnpikes are not entirely abolished. But, with the increase of traffic, Government has encroached on these private rights. It regulates canals, and has thrown the cost of most roads on the public rates in order that the public may have the free use thereof. And now that railways have become, according to the prophecy of George Stephenson, the highways of the nations, Government has encroached, is encroaching still further, on individual liberty and property. And the Government of the widest area is thinking of controlling the railways of the smaller areas in the interests of the whole. Freedom is diminishing.

"Lord Minto received at Calcutta a State visit from the Tashi Lama of Tibet," who was accompanied by monks. "The tail of his pony was repeatedly kissed by reverent Buddhists." The Tashi Lama is ruler of Tibet, a country wherein Church and State are undifferentiated. The Church is the State, the State is the Church, and that where Buddhism is the belief of the Church. Buddhism started as unconnected with any State as Christianity. Its original principles may almost be described as individualist, so independent does it make its devotees of God or man. From India—its original home—it has almost passed away, and the greater part of its followers are in Ceylon, Siam, and China, including Tibet (for Tibet is at least nominally part of the Celestial Empire). Yet in Tibet Buddhism has become the State religion, or rather it has become the State. So was Europe in its theocratic days a church rather than a State. How far we have travelled since then may be partly realised by contrasting this condition of things with that now prevailing in France, where the Revolution has ended so far with the entire separation of the State from all forms of ecclesiastical rule, whether (Roman) Catholic, Protestant, or Jew.

Germany and France have been for some time on the eve of a quarrel. The occasion has been the affairs of Morocco, as the occasion for their last great war was a candidature for the Spanish crown. But these are only opportunities. The reason for the mutual jealousy is that age-long controversy for the lands of the "Middle Kingdom." Ever since France and Germany appeared in the ninth century as separate parts of what had been the empire of Karl the Great, and Lotharingia was created to unite the two capitals, Aachen and Rome, for the third brother, the two neighbours of this long strip of territory, extending from the North Sea to the middle of Italy, have fought for its possession. Italy has rescued herself from the conflict and is one of the Great Powers. Holland, Belgium, and Switzerland are small States, neutralised by the public law of Europe, but they have thereby duties to perform. They must guard that neutrality, and accordingly our papers have been reporting that Belgium and Switzerland, the two States most affected by a conflict between France and Germany, have been making military preparations. The Rhine countries between these States, shared by the two great rivals, would be the battlefield, as of yore.

Book-keeping down to Date. By Andrew Munro. Second edition. viii.+206 pp. (Effingham Wilson.)—An excellent work, concise, clear, and accurate.

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ITEMS OF INTEREST.

GENERAL.

PROF. MICHAEL SADLER will be the president of the Education Section of the British Association, at the meeting to be held at York next August.

IN his presidential address at the annual meeting of the Incorporated Association of Headmasters, Mr. J. Easterbrook said that whilst recognising that much has been done, and that progress has been made, it must be stated that the Education Act of 1902 has not as yet done so much as was hoped for the proper organisation of higher education. Local authorities have been so occupied with elementary education, and the controversies connected with it, that in many instances they have hardly touched the question. In some counties, indeed, when they have considered it, it has only been to decide that they have no funds to set apart for any work beyond elementary education. In other cases secondary schools of an inferior type—secondary in name, but higher elementary in character—have been set up, and the Headmasters' Association wishes to put on record that it considers this policy is not in the true interests of secondary education. The working of the Act in London is being watched with peculiar interest. The metropolis was omitted from the Act of 1902, and a scheme was afterwards drawn up by which the County Council became also the local education authority. But the committee for all branches of education for this enormous population has only the status of an ordinary sub-committee of the Council, and it contains no direct representatives of professional experience.

LATER in his address, Mr. Easterbrook dealt with the question of the supply of masters for secondary schools. The best men from the Universities, he said, are not entering the profession of teaching in sufficient numbers, and the numbers appear to be dwindling year by year. Brilliant men are attracted elsewhere. Several reasons are given for this, one being the vexed question of tenure. The main cause of the decrease, Mr. Easterbrook thinks, is that the prospects do not appear to be sufficiently promising to attract good men. Salaries have improved considerably of late years, and the minimum salary in most schools has been raised, but there is pressing need of still further improvement at the top. The salaries in most schools tend to become stationary far too soon. The great majority of masters nowadays do not take Orders, so they cannot hope for preferment in the Church in their later years, and very few have the chance of being put in charge of boarding-houses. All cannot become headmasters, and there are not a few cases of men who have become headmasters who affirm that they are not so well off as they were when they were assistant masters. What is wanted is that an efficient assistant master may see a career before him with a sufficient competency in his later years, even although he may never become a headmaster. If the position and prospects of the assistant master were put on a more satisfactory basis, the public might fairly demand that the master should know his business, that he should not begin his work in complete ignorance of any of the principles of teaching, nor conduct experiments and gain his experience at the expense of his class.

AMONG important resolutions adopted at the annual meeting of the Incorporated Association of Headmasters, not referred to in the summary of the proceedings of the vacation conferences (p. 60), the following deserve attention:—(i.) That the current regulations of the Board of Education for secondary schools are tending to undue restriction of the "freedom, variety, and elasticity" which are desirable in the case of public secondary schools. (ii.) That the policy of minute regulation of details of school work, pursued by the Board of Education, constitutes a grave danger to secondary schools. (iii.) That in the award of grants special consideration should be given to the case of schools formerly called "A schools," of which the efficiency is threatened by the reduction of payments. (iv.) That discretionary power should be given to schools to enter pupils for external examinations in the first and second years of the course. (v.) That, in the opinion of this association, additional State aid is required to maintain and develop the efficiency of already existing secondary schools. (vi.) That this association approves of the proposal to form a federal council composed of representatives of the chief bodies of secondary teachers. (vii.) That it is advisable that steps should be taken for collecting data as to the physical conditions and growth of the pupils in secondary schools, and that the matter be left to the council for consideration.

DURING the course of his address at the annual meeting of the Incorporated Association of Assistant Masters, Lord Roberts said that 72 of the public schools have either Cadet corps or Volunteer battalions, 41 have neither one nor the other. On the whole the general feeling of headmasters is evidently favourable to the movement. Morris-tube or miniature ranges are practically universal in the schools which give training in shooting. Thirty-three schools have their own or easy access to adjacent ranges, 39 schools suffer in various degrees either from not having ranges close at hand or from the limited opportunities which a much-used adjacent range affords. The town schools are the worst off, and some of the London schools are obliged to resort to Bisley, Staines, or Rainham for their rifle practice. The waste of time, the railway expenses, and the charges for targets are prohibitive of anything approaching general practice for these corps. Of the 72 schools possessing Cadet corps only seven teach non-members shooting. Of the 41 other schools, in 13 shooting is taught, and in 19 good work is done in shooting. Physical drill does not seem to be universally taught, and enough attention is not paid to this health-giving exercise. In regard to the 237 preparatory schools, shooting is taught in only 66, in 20 it is compulsory, in 23 it is a privilege, and in 23 it is optional; in all 66 shooting is popular. Of the 171 non-shooting schools 36 are just beginning to start shooting, 31 are inclined to do so but have not definitely decided, five are unconvinced but open to conviction.

AT the conclusion of his address Lord Roberts said that the great objection made to military training and rifle-shooting instruction in schools is the amount of time that they take up. He suggested, however, that it would be better to devote the time spent on acquiring classical knowledge, which at the best is a doubtful help in after life to the individual, and none whatever to the State, to developing the schoolboy's body and intelligence by military training and the study of modern history, science, and geography, and strengthening his moral character by habits of discipline and obedience, thus fitting him to be a more useful member of society in after life, and enabling him to be of practical service if called upon to defend his country. Lord Roberts believes that the system of education has become too complicated, and that it requires to be simplified. Much has been done to correct opinions on education which have become obsolete, but still much remains to be done; and he is convinced that not only will the best interests of education be served, but the national

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character will be benefited and the national defences strengthened by the addition of a military training to the mental one afforded in our great schools.

The annual general report of the Incorporated Association of Assistant Masters in Secondary Schools, adopted at the recent annual meeting, sets forth that the number of names on the members' list is 1,737. The association has steadily grown from 72 members in 1891, when it was founded. During the year just closed the association was largely engaged in urging the claims of assistant masters on the local authorities, especially those establishing or taking over schools, and education committees in every case showed themselves ready to do what they could to meet the views thus placed before them. The Federation Committee is now considering a scheme for the formation of a Federal Council with limited powers of public action. The associations which it is hoped will be represented on this council are the Headmasters' Conference, the Headmasters' Association, the Headmistresses' Association, the Private Schools Association, the Preparatory Schools Association, the College of Preceptors, the Assistant Mistresses' Association, and the Association of Assistant Masters in Secondary Schools. Among other educational activities of the association is an inquiry into the after life of holders of County Council scholarships, a more ambitious piece of work than any other that the organisation has essayed. It has been decided to make a public journal of the *Circular*, the first number of which in its new phase will appear shortly.

Numerous resolutions were adopted by the Incorporated Association of Assistant Masters at their annual meeting. The first protested against the conduct of the governing body of a provincial secondary school in not allowing the housemaster a full opportunity of being heard in his own defence; the second emphatically condemned "the principle that a master should be dismissed for not introducing pupils to a school." The remaining resolutions were as follows:—That this meeting recommends the serious condition of the Register of Teachers to the attention of the incoming Government. That this meeting welcomes the proposal for a Federal Council of Secondary Teachers as likely to promote the co-operation of all associations of secondary teachers in advancing the general interests of education. That the association welcomes the proposal to establish a joint examination to qualify for matriculation in the Universities of Oxford and Cambridge, and trusts that the standard of such an examination will be higher than that of Responsions and the Previous examination.

The annual meeting of the Geographical Association was held on January 5th, when the report for 1905 was adopted. The report shows that the total membership of the association is 503, including teachers of every grade, school inspectors, and others interested in geographical education. Approval was expressed of the spirit of the new regulations for geography, issued by the Board of Education. An important advance was made during the year by the formation of local branches. This is a valuable expansion of the work of the association, enabling members to meet at more frequent intervals, to discuss the advantages presented by their own district for teaching geography, permitting combination in excursions and co-operation in the accumulation of lantern-slides and other materials necessary for good teaching. Dr. G. R. Parkin, secretary of the Rhodes Scholarship Trust, who was in the chair, dealt in his address with the general question of geography. In war, he said, geography is of the greatest importance. In commerce, too, geography is everything. Only last year the great cotton districts of Lancashire began to realise that the supplies of cotton were not sufficient for the demand, and Sir Alfred Jones organised a company to discover what places under the British flag are suitable for raising cotton. As the great workshop of the world, which almost requires the world from which to draw raw material and food, no nation ought to know so much about geography as ourselves.

The public schools science masters held their annual meeting at Westminster School on January 20th. In the absence of Sir Oliver Lodge, Sir Michael Foster presided, but gave no presidential address, his mind, as he said, having been filled with other and less important concerns. The association was thus occupied solely with two papers, the first of which, read by the Rev. W. Madeley, of Woodbridge, raised the question of science-teaching for the classical scholar. The reader of the paper (by the way, it is an excellent innovation for teachers of other subjects to be invited to give their views) advocated a general survey of the whole field of science, and he kept up his end manfully against the attacks of other speakers, including the chairman, who maintained that a knowledge of scientific method and the acquirement of the scientific attitude of mind are the things that matter, and that can only be obtained by patient work in the laboratory. The question is a very important one, and deserves the attention of university authorities as well as of schoolmasters. Mr. Talbot, of Harrow, read the second paper, on the present state of the Army Entrance examination. The discussion on this resolved itself at one period into a debate on the best way of examining practical work. There seemed to be a consensus of opinion that a practical examination is of little value unless the examiner is there to see the boys working; and that if this is impossible, a certificate signed by the teacher, saying that a boy had been through the practical course, would be enough to supplement a paper examination, at any rate in the qualifying stage. After the papers an interesting display of apparatus was given in the new laboratories.

The Board of Education has notified the Teachers Registration Council that the operation of the temporary or "grace" clause of the Regulations for Registration in Column B will be extended until July 31st, 1906, with the exception of the provision for the registration of headmasters and headmistresses at the end of that clause. The effect of this modification will be that all teachers possessing an academic qualification, who complete by the above-mentioned date the necessary three years' experience, will be eligible to apply for registration in Column B, provided such applications be lodged by July 30th, 1906. But headmasters and headmistresses claiming under the proviso alluded to above must lodge applications not later than March 5th, 1906. Copies of the regulations and forms to be filled in may be obtained on application to "The Registrar, Teachers Registration Council, 49 and 50, Parliament Street, London, S.W."

The Board of Education has had under consideration the questions connected with the attendance at public elementary schools of children under five years of age. In view of the many difficulties which the matter presents, it has been decided to reconsider the advisability of laying before Parliament the Minute which had been proposed for modifying the system of grants in respect both of children under five and of the other scholars in public elementary schools. This decision involves a reconsideration by the Board of the manner in which some measure of relief can best be afforded to those areas where the burden of the education rate is specially heavy.

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A BLUE-BOOK recently issued [Cd. 2782] contains full statistics of public education in England and Wales for the years 1903–5. One section of the volume is devoted to State-aided secondary schools. In 1903–4 there were 482 recognised secondary schools with 52,466 pupils taking the course of work approved by the Board of Education, and the amount of grant paid to these schools during that year was £175,250. In 1904–5 the number of recognised secondary schools rose to 576. The same section of the volume gives a list of secondary schools showing the number of pupils taking the approved course, the number of pupils in respect of whom grant was paid, and the amount of grant for 1903–4.

A COURSE of lectures on "Hygiene and its Bearing on School Life" has been arranged by the Royal Sanitary Institute, to be held at the Parkes Museum, Margaret Street, W. The lectures are intended to assist teachers interested in the training of children and the structural conditions of the school, its surroundings and furnishing, as well as in the personal health of the scholar. The course will commence on February 19th, and will consist of lectures and practical demonstrations on personal hygiene, and on schools, buildings, and equipment. A fee of 5s. will be charged for the course. Students desirous of attending the lectures should send in their names to the secretary of the Institute, from whom further particulars may be obtained.

A MEMORIAL to the council of the Senate of the University of Cambridge, which has recently been circulated among the resident members of the Senate, requests the council to take steps to ensure the consideration of the following questions:—(i) The advisability of imposing an all such candidates as may not otherwise be qualified for exemption the passing of the Previous examination, or of another examination in lieu of the Previous examination, as a condition precedent to matriculation in the University; (ii) the possibility of obtaining the co-operation of the University of Oxford with the University of Cambridge in establishing a joint examination which should qualify for matriculation in either University.

THE Civil Service Commissioners have given notice that open competitive examinations for woman clerkships and for girl clerkships in the General Post Office, London, will be held in London, Edinburgh, Dublin, Liverpool, Aberdeen, Belfast, and Cork, commencing on March 6th. Appointments will be offered to not fewer than thirty of the candidates highest on each list, provided they obtain the necessary aggregate of marks and are duly qualified in other respects. Application for admission should be made to the Secretary of the Civil Service Commission, Burlington Gardens, W., on or before February 15th. The subjects of examination are:—(1) English composition, including writing and spelling; (2) arithmetic; (3) geography; (4) Latin; (5) French; (6) German; (7) English history; (8) algebra; (9) shorthand. (Two only of 4, 5, and 6, and two only of 7, 8, and 9, may be taken.) Girl clerks, serving six hours a day for two years, receive £35 and £37 10s., and, if competent, they then become woman clerks; those who are not may become female sorters. Woman clerks, working seven hours a day, receive £55 a year, rising by £2 10s. to £70, and by £5 to £130; they are eligible for appointments as principal clerks, of whom there are about seventy, at £140, rising by £10 to £190, and as superintendents, of whom there are about thirty, at from £200 to £500. Female clerks should not be confounded with the telegraphists or counterwomen employed in post-offices. They are not brought into contact with the public at all, their duties being of a purely clerical nature. Service entitles them to a pension on the ordinary Civil Service scale, and to a gratuity after six years' service when they resign on marriage.

THE Civil Service Commissioners intimate that arrangements are being made to hold an open competitive examination for not fewer than fifty clerkships in the Second Division of the Civil Service on March 26th next. The forms of application for admission are now ready for issue. It is intended to hold another examination in October. The subjects for this examination were altered in 1900 in order to make it more suitable for boys from secondary schools. They now are:—(1) writing and orthography including copying MS.; (2) arithmetic; (3) English composition; (4) précis, including indexing and digest of returns; (5) bookkeeping and shorthand; (6) geography and English history; (7) Latin; (8) French; (9) German; (10) elementary mathematics; (11) inorganic chemistry, with elements of physics. (N.B.—Not more than four of the subjects 4 to 11 may be offered, nor more than two of 7 to 9.) Boy clerks receive service marks up to 120. The difficulty of obtaining these appointments is due to the severity of the competition—in October last seventeen to one—rather than to the scope of the work, as the following syllabus in elementary mathematics shows:—Triangle, the number and nature of the conditions that determine it, simple relations among its parts. Parallels. Areas and volumes; expression for the area of a parallelogram or triangle in terms of base and height; to make triangle or square equal to a given figure. Arithmetical definition of ratio; number and nature of conditions that determine the shape of a triangle or polygon; sine, cosine, and tangent of angles less than 180°. Circle, simple relations, angle properties, tangents, and rectangle properties. Algebraic formulas, graphs, equations, indices, logarithms, in connection with the above and other problems. Theorem of Pythagoras and its extension to any triangle. Grasp of elementary principles and readiness in practical applications will be looked for. Simple problems in three dimensions are not excluded. No great skill in the use of drawing instruments will be expected. The salaries are £70, rising by £5 to £100, then by £7 10s. to £190, and then by £10 to £350. There are staff appointments with higher salaries, and a chance of promotion after eight years to the Higher Division.

BY an unfortunate oversight, Messrs. Poole and Becker's "Lectures françaises, Géographie et Histoire," included last month in our list of Most Notable Books for 1905, was stated (p. 21) to be published by Mr. John Murray. The volume is published by Messrs. Blackie and Son, Ltd.

WE regret that, on p. 36 of our last issue, Mr. A. T. Quiller Couch's "Historical *Tales* from Shakespeare" (Edward Arnold) was referred to as "Historical *Plays* from Shakespeare."

SCOTTISH.

UNDER the auspices of the Glasgow School Board an interesting and valuable exhibition of school work was held in the Royal Fine Art Institute from December 25th to January 6th. School exhibitions, as a rule, serve only to waste the time of the teacher, to minister to the foolishness of parents and the vanity of pupils, and to deceive the public—the reason being that the exhibits do not, as a rule, represent work done under normal conditions. The Glasgow exhibits, however, were the genuine product of

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the pupils under the ordinary time-tables, and specimens were on view from each of the seventy schools of the Board. Much of the work was of a high order, and was a splendid testimony to the skill of the teachers and the diligence of the pupils. Some of it, however, was bad enough to convince even the most sceptical that the exhibition was a genuine one. The drawing, needlework, and manual work reached a high standard of excellence on the whole. One of the most disappointing features in the exhibits was the poor quality of the writing. There were notable exceptions, but taken all in all the writing was distinctly inferior, and proves that at least *one* of the three "R's" is not receiving adequate attention. An exceedingly interesting course of lectures on various aspects of school work, by specialists in their respective subjects, attracted large audiences every evening, while the exhibitions of school drill, cookery, &c., lent variety to the proceedings.

SCOTSMEN generally are congratulating themselves on the honourable place so many of their countrymen hold in the new Cabinet. Scottish teachers in particular have reason to be satisfied with the complexion of the Ministry. Three of its most distinguished members—the Prime Minister, the Secretary for War, and the Secretary for the Colonies—are honorary fellows of the Educational Institute of Scotland. The Lord Chancellor was for a short period a Scottish inspector of schools; while the Lord Advocate, an ex-teacher himself before qualifying for the Bar, has frequently appeared at educational meetings and in many other ways showed his practical interest in education. The Solicitor-General has proved himself one of the most strenuous advocates of the teachers' cause. On a recent occasion, speaking on the prospects of the profession, he said "he firmly believed that in the teaching profession promotion was slow, and that genius, even when recognised, was inadequately rewarded. Add to this the poor, mean, shabby, beggarly return for their long and arduous services which they secured under the Superannuation Act, and they saw the reason for the dearth of teachers." In view of these words, and the position of the speaker, teachers are naturally looking forward with high hopes to the approaching revision of the superannuation scheme.

Mr. J. STRUTHERS, C.B., in presenting his first annual report on secondary education in Scotland, directs attention to the rapid and remarkable development which the system of inspection of secondary schools has undergone since its initiation twenty years ago by Sir Henry Craik. Sir Henry's term of office was rendered memorable by developments in many directions, but in none had the progress been so striking as in the sphere of secondary education, and it is those who have been most closely associated with him in his work who are most deeply sensible of the value of his services to his native country. After this graceful tribute to his predecessor, Mr. Struthers proceeds to review the position of secondary education in Scotland. During the past year 110 secondary schools applied for inspection at the hands of the Education Department, so that there is now hardly a single secondary school of any standing whose work does not come under the review of the Department's officials. One of the most notable features during the year is the increase in the number of higher-grade schools. These schools took the place of the highest type of the old parish schools, and were meant to furnish education up to about the age of sixteen. In 1900 the total number of such schools was 31, last year it rose to 74, and this year shows a further increase to 131.

MR. STRUTHERS, following the example of his predecessor in office, has some plain truths to say to business men regarding their attitude towards education. "Merchants and business houses must extend some sort of practical encouragement to boys to equip themselves properly before they enter an office. It is idle to expect that lads will stay at school until the age of sixteen or seventeen, if, when they begin to look out for employment, they find themselves treated exactly in the same way as those who have left school at fourteen, or perhaps as those who have made their escape at twelve, under shelter of the exemption clause." Until our leaders of commerce are educated up to this level it is idle to look for a rise in the age for leaving school in commercial centres.

THE Department's special certificates, such as the commercial certificate and the technical certificate, have so far failed to attract any considerable section of the pupils. The Department would do well to reconsider their whole system of certificates, and recast them on a more elastic basis. There should only be one form of school-leaving certificates, the subjects of which should be sufficiently varied to suit every variety of capacity and need. The Department have hitherto confounded their school-leaving certificate with the University preliminary certificate, and so long as they continue this the situation in secondary schools cannot be regarded as satisfactory.

THE annual congress of the Educational Institute of Scotland took place this year in the old historic town of Dunfermline. The name of this town appears among the earliest records of Scottish history, and for several centuries it continued to be the centre of the nation's life. Malcolm Canmore and Queen Margaret, Alexander I., II., and III., and several other monarchs kept regal state here, and here also the heart of Bruce found its final resting-place. Owing to the operations of the Carnegie Dunfermline Trust, the town to-day is the municipal Mecca of Europe. Experiments on a great scale are going on here for the social and moral elevation of the people, and the trustees are not without hope that in the course of years they will have a town fragrant with the odour of flowers and melodious with the singing of birds in the heart of the city. It is not to be wondered that in these circumstances the attendance was the largest in the history of the Institute. The President, Mr. Service, presided with distinction over the numerous functions, and delivered a remarkably practical and interesting address on the subject of "Method in School Work." The congress programme was greatly disarranged owing to the General Election. The Earl of Elgin, Mr. Herbert Paul, M.P., and Mr. Wm. Jones, M.P., who were to have taken a prominent part in the proceedings, had to cry off on account of the pressure of political claims, but notwithstanding these losses the programme was highly interesting and enjoyable.

THE notice of the congress would be incomplete without some account of the exhibition of swimming and gymnastics in the Carnegie Baths and Gymnasium. These buildings are probably the largest and best equipped for their purpose in the kingdom. The enormous dimensions of the gymnasium were the wonder of all the visitors. It seemed as if it were intended as an exercise ground for the whole population of Dunfermline. The swimming-pond is one of the largest of its kind, and in connection with it are Turkish, Russian, and every variety of baths. A book of the congress was prepared by Messrs. Oliver and Boyd, and with its interesting letterpress and beautiful illustrations it should form a valuable *souvenir* of a remarkable meeting.

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THE Association of Secondary Teachers has been considering for some time the question of the training of teachers, and at their annual general meeting the whole subject came up for discussion, and the following resolutions were adopted :—(i.) All secondary teachers should hold a university degree. (ii.) The teachers of the higher branches should, as a rule, have specialised in their particular subject or subjects. (iii.) The course of professional training should be post-graduate, and should be given in a training college or recognised secondary school. (iv.) After the conclusion of the post-graduate course, candidates should undergo a period of probation in a secondary school.

THE West of Scotland branch of the Teachers' Guild has been considering the subject of geography, and has arrived at a series of resolutions, some of which are not remarkable for their wisdom or practicality. They ask that in the prosecution of the study of geography "every facility should be afforded pupils for undertaking, under proper supervision, systematic field work, excursions, *factory visits*, &c." What "factory visits, &c." have to do with the study of geography it is difficult to understand. Another resolution asks "that by a service of central committees or otherwise, a common and definite understanding should be come to between the Scotch Education Department, expert geographers, examiners, teachers, and book publishers as to the compiling and producing of text-books, maps, atlases, &c., best suited to advance the national teaching of geography." This is protection with a vengeance, and books and maps representing the composite views of these different authorities would assuredly be works *pour rire*. The remaining resolutions are marred for the most part by a constant appeal to the Education Department to prepare schemes, lesson-periods and courses, and in short to do everything that the properly trained teacher should do for himself. The whole tendency at present is towards imposing on schools the methods and schemes of outside authorities, and leaving to the teachers only the liberty of carrying them out. Teachers are already sufficiently "cribb'd, cabin'd, and confin'd," without appealing to all the gods for more fetters.

IRISH.

THE new Chief Secretary, Mr. Bryce, well known as he is for interest in the educational world from the part he took in the Royal Commission on Secondary Education, as a member of the Senate of London University, and as a vice-president and former president of the Teachers' Guild, has abundance of educational problems before him in Ireland, and will make his mark if he can effectually solve some of them. In primary education there is the serious falling off in the number of male teachers offering for training, the low salaries, the inefficiency of the buildings, and the grave discontent with the present programme. With intermediate education there is almost universal dissatisfaction; the rules have become so complicated that the system has practically broken down, while the larger questions of professional status and training for secondary school teachers still lie untouched. The University problem has not advanced at all towards a practical solution. And above and behind all these is the subject of co-ordination. When such educational difficulties are confronting him, it is a satisfaction to have a Chief Secretary who is both personally and by experience competent to handle them.

Two very serious matters have arisen in intermediate education at the opening of the new year. In the first place, largely owing to a decline of £7,000 to £8,000 in the income of the Board from local taxation (Customs and Excise), there has been an alarming falling off in the grants made to schools for 1905. Roughly, there is a decrease from 1904 of about 30 per cent. In the preparatory grade there is a decrease in the scale of payment from £5 9s. in 1904 to £3 16s. in 1905; in the junior grade from £8 3s. 6d. to £5 14s.; in the middle grade from £16 7s. to £11 8s.; and in the senior grade from £24 10s. 6d. to £17 2s. These are the rates for pass students; the rates for honours are higher, but with a proportionate diminution. The results fees system has been condemned again and again, but while it continues it should remain regular and constant. Of course, the Intermediate Board cannot dispense what it does not possess, so that it is a matter for the Government to see that the payments to teachers shall not become smaller because the nation is more sober. On the other hand, we think that special payments in new directions, such as bonuses for choirs and orchestras, which are sporadic and unequally distributed, should be discontinued until the regular and normal grants to schools are placed on a satisfactory basis. All teachers must suffer from the decrease this year, directly or indirectly, and much sympathy must be felt for those whose salaries depend mainly upon the amount of the grant.

THE other matter is in relation to the time-table which has been issued of the examinations for next June. They will begin on Monday, June 11th, and continue every weekday, except Thursday, the 14th, until Monday, June 25th. In previous years there have been two sets of papers, pass and honour, which have been set simultaneously. This year there is a third set of papers, called more searching papers, under Rule 43, for candidates for exhibitions and prizes. The latter, having chosen their group, will have two extra papers, in addition to the ordinary honour papers, in their special subjects. These extra papers have caused great mischief in the time-table. The natural and simple course of procedure would have been to set both these two extra papers in all four groups simultaneously on a single day at the end of the examination. Instead of that, they are sandwiched one by one, day after day, between two ordinary papers, with extraordinary results. For, in the first place, all papers except those for science and drawing are reduced in length to two hours. Why science and drawing should form exceptions it is difficult to see. The drawing papers are all for three hours. The science papers, on some indistinguishable principle, vary from two hours to three hours and a quarter (this quarter is delightful!). And yet it is surely easier to set a satisfactory drawing paper in two hours than it is a Latin one, which must include composition, prepared and unprepared translation in both verse and prose, and history, besides grammar questions. In the second place, the hours on most days are 10–12, 1.30–3.30, and 4–6. The breaks are unsatisfactory for meals, and that between 3.30 and 4 too short, whether for rest or refreshment. Thirdly, the hours handicap some candidates as opposed to others. To take an example. The first special paper is on Tuesday, June 12th, when the time-table is Greek (P. and H.), 10–12; special papers in Greek and preliminary science (first and second years), 1.30–3.30; English literature and composition, 4–6. Who can deny that candidates taking the first afternoon paper, especially those taking Greek, who have already had another paper in the morning, are handicapped on the English paper, which is compulsory on all candidates and the most important in the whole examination? If it is not too late, the time-table should be entirely rearranged.

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It was semi-officially announced towards the end of December that a third revised list of exhibitions and prizes for 1905 is to be issued by the Intermediate Board, but that, as this would involve much labour and time in looking into the marks, it would probably not be issued for some time. Could anything be more unsatisfactory or show more confusion than the publication of three different lists of results for one examination?

The Catholic Scholarships Committee has announced the rules which will guide its award next autumn. Only candidates who have passed the Intermediate examinations in the senior grade in 1905 or 1906 will be eligible. In apportioning the scholarships between girls and boys, it will have regard to the relative number of both sexes who obtain honours in the senior grade in 1905 and 1906. Finally, the scholarships will be divided among boys in all four groups, but among girls only in the modern literary and experimental science groups, with the proviso that they may be awarded also in the classical and mathematical groups if the candidates are of sufficient merit. We think the last rule is unsatisfactory. These are university scholarships; Latin, Euclid, algebra, are, and always will be, important university subjects, and the rule as at present drawn up will positively deter girls from giving attention to these subjects. In our opinion, they should rather have been encouraged than discouraged.

The Friends' Guild of Teachers this year held its eleventh annual conference in Dublin for three days, from January 3rd to January 5th, under the presidency of Mr. J. W. Graham. The president's address dealt with "The Calling of the Teacher." The most interesting meeting was an open one on Thursday evening, when Mr. J. W. Headlam, of the Board of Education, delivered a lecture on "The Position of Latin in a Modern Education," in which he argued for the importance of Latin in secondary schools, the leaving age of which was sixteen or seventeen. Miss Bayes read a paper on "How to promote Independence of Thought in the Child," and this was followed by short papers on "School Libraries," by Mr. A. Rowntree, and on "School Museums," by Mr. E. E. Unwin. There was also an exhibition of educational publications.

WELSH.

The Cardiff Education Committee reports that the teaching of Welsh is now compulsory in all the elementary schools of the city. The organisation of the teaching has still to be completed. It does not seem practicable to accomplish this by transfer of the present teachers, and a sub-committee suggests the immediate appointment of one man teacher and five woman teachers capable of teaching Welsh; and that, for the future, a knowledge of Welsh be a ground of preference. It was resolved to advertise for teachers at salaries ranging from £70 to £90 for women and £80 to £100 for men, according to qualifications.

At Pwllheli County School recently was acted a short play which had been translated and adapted from French into Welsh by two pupils.

Mr. Lloyd-George has met the charge of starving one-third of the schools in Wales by understaffing. His argument is: The denominational schools are inferior in staff, numbers, and equipment to the Council schools. If these schools had been levelled up all at once, there would have been needed an increase to the staffs of the non-provided schools of 50 or 60 per cent. of certificated teachers. These are not forthcoming, and to staff the non-provided schools with teachers available would have been to provide those schools with an inferior type of teachers, who, if once appointed, would not easily have been replaced by better teachers for the next thirty years.

Mr. Lloyd-George announced that he had received assurances from the new Liberal Government, before he accepted office, that a Welsh Education Joint Council should be established.

A communication has been sent from the Board of Education to Montgomeryshire Education Committee, that primary grants earned by the schools will be paid direct to the Welsh education authorities, without deduction. The Montgomeryshire education authority therefore has resumed its work. It was accordingly decided to pay the salaries of the teachers and caretakers forthwith.

More than three months ago the Talaon (near Holywell) Roman Catholic elementary school was closed owing to an outbreak of scarlet fever. These schools, it appears, have not since been reopened, nor have they been disinfected as required by the medical officer. The managers, it is understood, have handed them over to Sir P. Mostyn as private schools. Meanwhile the clerk to the Holywell Rural District Council has written to the education authority, without success, to get it to attend to a question involving the health of the district, but it is unwilling to spend any money on the schools.

Lord Stanley of Alderley has directed the attention of Wales to the words spoken five years ago by the Duke of Devonshire, when he said that the people could not have a satisfactory plant of secondary education growing from a defective elementary root. When it is remembered that about 80 per cent. of the pupils in intermediate schools come from the public elementary schools, Lord Stanley seems on safe ground in saying that the thoroughness of the intermediate schools must be in proportion to the thoroughness of the elementary schools.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

French Exercises. By C. E. Prior. vi. + 249 pp. (Rivingtons.) 4*s.* 6*d.*—The preface would be less confusing if the second paragraph were omitted, according to which "the method which we here try to put into practice is that of teaching French through the medium of French"; for we are told immediately after that there is to be translation and re-translation, so that English also does duty as a medium. This is, indeed, a good book on the old lines. Rules are given first, then a vocabulary, followed by a useful selection of French sentences, some questions to be answered in French (the only concession to the reformers), and (in another part of the book) the English of the French sentences, a summary of the grammar, and vocabularies. There are also some French passages with the English rendering on the opposite pages. The book is a careful piece of work; particularly the French sentences are likely to be useful.

La Bruyère, Les Caractères. Edited by E. Pellissier. xvi. + 180 pp. (Macmillan.) 2*s.* 6*d.*—This forms the beginning of a series of classical French texts under the general editorship of Mr. Siepmann, and a most promising beginning it is. A good selection from "Les Caractères" is admirably annotated by Mr. Pellissier, who also supplies a useful summary of the chief grammatical peculiarities

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occurring in the text. In the appendices Mr. Siepmann gives us, as usual, words, phrases, and sentences for *viva voce* work; it is a little distressing to find La Bruyère degraded to such uses. In the third appendix we now have a number of passages on "The France of Louis XIV." and on "La Bruyère" for translation into French, in place of passages based on the text; and a fourth appendix contains subjects for free composition, which is a welcome innovation.

The Modern Language Review. Vol. I., No. 1. Edited by John G. Robertson. 84 pp. (Cambridge University Press.) 2*s.* 6*d.* net.—*The Modern Language Quarterly* did good work in its day, but it was handicapped by combining a journal for scholars and one for teachers. The *Review* carries on the former section, and the first number recently issued is most promising, and does great credit to Prof. Robertson and his able advisory board. It is to be hoped that all who have the study of English and other modern languages at heart will become subscribers to the *Review*, or, better still, join the Modern Language Association, in which case they will receive the *Review* and *Modern Language Teaching* as well.

A. E. C., Ma Première Visite à Paris. 106 pp. (Oxford University Press.) 1*s.* 6*d.*—A chatty account of a visit to Paris, prettily illustrated and nicely printed. There are no notes, but a French-English vocabulary is provided, in which the choice of words seems not to have been made according to any obvious principle.

Mérimée, Le Siège de La Rochelle. Edited by J. E. Michell. 35 pp. (Blackie.) 4*d.*—This is an excellent short text, of moderate difficulty. The introductory note and the list of Mérimée's more important works are useful. The notes are careful and sufficient.

Modern Greek Self-taught. By Nicolaos Anastassiou. 120 pp. (Marlborough.) 2*s.*—A worthy addition to this eminently practical series, which has only one serious drawback, the "phonetic pronunciation." If the editor of the series had only adopted the international alphabet, it would have gained in value very considerably. The vocabulary given is particularly good, and few common words have been overlooked. The omission of Sunday on p. 22 is an oversight; the inclusion of a tablecloth in the "washing list for ladies" is a little startling. The printing is careful. Even those who are not contemplating a visit to Greece will find much to interest them in the word-lists, particularly the "vulgar" forms, taken from many different sources, which may often be traced without difficulty.

Theodor Körner, Der Vetter aus Bremen. Edited by Ch. H. Clarke. 32 pp. (Blackie.) 6*d.*—Körner's comedies are delightful, and are particularly remarkable when we consider the youth of the poet. Mr. Clarke gives an account of his short life, and supplies adequate notes. We have noticed a few slips: *sammtne* for *samtne* (p. 10, l. 16), *Unterscheid* (p. 29), *Handeswerk* (p. 30), *einspürige* (p. 31). Adelung's explanation of *sein Schäfchen ins Trocknene* [sic!] *bringen* (p. 29) is now discredited. The explanation of *Wettermädel* as "a girl who acts with the promptitude of the elements" is quaint, but certainly not convincing.

Chambers's Advanced German Grammar. By C. E. Aue. Revised and enlarged edition by O. Schlapp. viii.+418 pp. (Chambers.) 3*s.* 6*d.*—Many teachers will be glad to have this new version of Dr. Aue's well-known Grammar, which has been reset and has received a careful revision at the hands of Dr. Schlapp. It now forms a very good book of reference, practical, clear, and copiously illustrated.

Classics.

An Elementary Greek Grammar for Schools. Part I., Accidence; Part II., Syntax. By John Thompson. xii.+152, x.+159 pp. (Murray.) 3*s.* (or separate, 1*s.* 6*d.* each part).—Mr. Thompson's larger Greek Grammar has already won a place in the world of scholarship; this abridged work for schools will, we think, win equal acceptance. Its good points are accuracy of scholarship and agreement with the canons of philological research. Mr. Thompson is a linguistic specialist, and such knowledge, although little need be directly imparted in a school-book, is really essential to the compiler of a Grammar. The book is original; it is a new work, not an adaptation of others. Take for example the treatment of the Article (Syntax, p. 5). Mr. Thompson begins with the article as demonstrative—ὁ μέν, ὁ δέ, and similar phrases. Thus the treatment is at once historical and practically convenient, since the pupil when he begins Homer will be already prepared for the Homeric demonstrative. We are very much pleased with this Syntax. There are a few points in the Accidence which need correction. "Grandfather" does not contain a short *a*; the first two syllables are both long. The sound hardly exists in English, but the indefinite article sometimes almost has it (as in "*a* man"). It would be better to go outside English for this sound. The indefinite ποιός (p. 55) has the accent on its final, as ποτέ, ποσός, &c. It loses the accent, of course, when it can throw it back; but the word has an independent existence and accent. And we do find fault with the publisher for not making the margin of the text larger, and choosing a type which suits better the size of the page. However, our modern publishers seem to have lost their eye. We never see a good page now, although they need only copy almost any quarto between 1550 and 1600.

Thucydides, Book I. Edited by E. C. Marchant. li.+281 pp. (Macmillan.) 3*s.* 6*d.*—Mr. Marchant is a practised editor, and he has here produced an edition which will be useful to the university man, or to the sixth-form boy in preparing for examinations. The introduction is excellent, especially that part which deals critically with the structure and contents of the book, and the sketch of the author's "Mind and Style." The notes are for the most part clear and comprehensive on points of difficulty (one or two being a little diffuse); they generally avoid giving needless or elementary information, and they pass over nothing of any moment. The text is conservative, although we do not agree that the conjecture ἐπελθόντες should be read in ch. 24. 1, nor are we confident that ἄν should be inserted in 127. 1 (surely the *recta* might be προχωρεῖ). We have noted a number of points in which our interpretation would differ from Mr. Marchant's, but that is inevitable; when, however, he says that ἀνδριάντας in 134. 4 need not be statues of Pausanias, but may be "symbolic figures consecrated to the gods of the upper world," we do not understand him. Symbolic figures of what? Not of the gods, for which ἄγαλμα is the proper term; of what, then, but of Pausanias? His namesake saw these statues (iii. 17. 7).

Valerius Catullus, B.C. 87: *Selected Poems.* Rendered into English Rhymed Verse by L. R. Levett. ii.+70 pp. (Cambridge: Heffer.) 1*s.* net.—This book is evidently a labour of love. Mr. Levett modestly disclaims

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in his preface all special qualifications for appearing as a translator of Catullus, or indeed of anyone else; his aim is to "introduce some people to a new friend." It would be unfair, then, to apply very strict standards to it. We must, however, direct attention to a fault which runs through nearly all modern verse when it leaves the simple iambic or trochaic rhythm, the two-syllable foot—a lack of feeling for quantity, or, to put it in another way, a tendency to gabble. Take almost any line from the "Epithalamium"—

Was wédlock's friénd *since the* wórld began—
With sílvery mus*ic to* join our singing—
Receí*vest the* heartsick lover's prayer—

and they are found to be impossible to recite without losing the true value of some of the consonants or vowels, or sacrificing the metre. Probably many will not feel this even when it is pointed out, so far are we gone from the true theory of verse as a thing spoken. These verses are only tolerable by those who read with the eye, that is, they are based on a false principle. We venture to point this out, because the author is obviously young, and, if he chooses, may learn to do good verse. Some of the pieces translated are unpleasant in subject (*e.g.*, p. 40). Mr. Levett is best in his short-line rhymed verses; we may also mention "Reconciliation" (p. 12) in the Khayyam stanza, and "One Good Turn deserves Another" (p. 54) in a humorous vein. We should not recommend rhyming *palm* with *charm*.

Elegiac Selections from Ovid. By R. B. Burnaby. (Blackwood.) 1*s.* 6*d.* Illustrated.—This book is overloaded with notes—ninety pages of small print as against thirty pages of text. The notes include an excursus of three pages on the subjunctive mood—which we observe begins with the potential—bristling with references, hardly any of which are quoted, and none of which will any boy ever look up. The Latin Grammar is the place for this kind of thing, and the pupils ought to find their own examples. There are five pages of notes on prosody. The notes to the text leave the happy boy nothing to do, except to look up a few words now and then. Thus: "acc. of direct object" (p. 114), "*egŏ*: pyrrhic at end of pentameter" (p. 112); "*cum uidi*: purely temporal" (p. 111); "*factum* is used as a subst." (p. 103); "*ut*=how, introducing indirect questions" (p. 93); "*ora*, poetical accus. of the part of the body affected" (p. 79). But enough. It is positively wicked to write such notes. Besides these, there is all manner of information on myth, archæology, &c.—reams of it—very interesting, no doubt, but the boy was never born who would get up all this with his construing. The illustrations are the usual mixture: Titian, a Greek Demeter, Roman lamps—some of them quite to the point. We devoutly hope that the day is approaching when people who write notes will have some other aim than to save the pupil that trouble which is of the essence of education. We are glad to add that the choice of extracts is good.

Criticisms and Elucidations of Catullus. By H. A. J. Munro. Second edition. xii.+250 pp. (Bell.)—Scholars will be indeed grateful for the reprint of this book. Munro as a Latinist had few rivals, and his work was all too scanty; this particular work has been out of print and almost unprocurable for a quarter of a century. The editor, Mr. J. D. Duff, has now added three papers from the *Journal of Philology*, with a reference here and there to later discussions of certain points by the author. The book is too well known to need a new criticism; we content ourselves with directing attention to its re-publication.

Mathematics.

Easy Mathematics, chiefly Arithmetic. By Sir Oliver Lodge. xvi+436 pp. (Macmillan.) 4*s.* 6*d.*—The complete title requires the addition of the words "being a collection of hints to teachers, parents, self-taught students, and adults, and containing a summary or indication of most things in elementary mathematics useful to be known." As might be expected, the treatment of the subject is not conventional, and does not conform to any syllabus; the book has been written in "the earnest hope that the teaching of this subject may improve and become lively and interesting." The object aimed at is unquestionably good and is certainly one with which every earnest teacher is in hearty sympathy, although it is undoubtedly true that many teachers do not succeed in making the arithmetical lessons interesting. The chief merit of this work—and it is a great one—seems to us to lie in the enormous range of illustrations, and especially in those that refer to approximate methods. The earlier chapters are more diffuse than those towards the end of the book, many of the illustrations and methods being of a kind that are not printed in text-books, but are often, probably always, used in class teaching; but every teacher would profit by reading these chapters, because, in addition to what may be called "stock" illustrations, there are many which certainly do not come within the range of the ordinary teacher. In the later chapters, particularly in Part II., there is very much that is really helpful, though we think that there is in some cases an attempt to explain more than can be properly done at the stage reached. In fact we could wish that throughout the book there had been more attention given to the remark on p. 271: "That does not for a moment mean that proofs can be dispensed with, for without a proof we should not really know the fact." The book is however suggestive in many ways, and teachers would do well to study it; even where they disagree most strongly it is highly probable they would profit by the suggestions it contains.

A College Algebra. By Henry Burchard Fine. viii.+595 pp. (Ginn.) 6*s.* 6*d.*—This treatise is divided into two parts of very unequal length. Part I. (pp. 1–78) contains a very thorough discussion of the number system of algebra, the discussion being based "on the notion of cardinal number and the notion of order, as exhibited in the first instance in the natural scale 1, 2, 3, . . ." The exposition is exceedingly clear, and, though it may seem to those who are not familiar with the modern treatment to be too abstract, it is nevertheless an excellent presentation of a subject that receives but scant justice in most of our current text-books. The importance of definitions is properly recognised, and there is no attempt to prove rules of combinations when these rules are really the definitions of operations. Part II. (pp. 79–589) is entitled "Algebra," and embraces a very full course, including infinite series and products, determinants and theory of equations. It is quite impossible in a short notice to examine the treatment of the various parts in detail; the amount of matter is much greater than can be inferred from the number of pages, and yet compression is very seldom (if ever) obtained at the expense of clearness or of accuracy of statement. The treatment of equations is uniformly good, and frequently emphasises details that are often neglected. The chapters on infinite series are also excellent, and form a good introduction to advanced work in that subject. The last chapter deals with the properties of continuous functions, and contains a proof of the fundamental theorem of algebra. When a treatise is in general so good as that

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before us, it is a little ungracious to "ask for more"; yet there are some omissions that might be easily inserted in another edition. Thus chapter xvii. might with advantage be considerably expanded, and more applications given of the theory of inequalities to problems in maxima and minima; many of these problems are much more easily handled by algebraic methods than by those of the calculus. This text-book of algebra is, however, of unusual excellence; it is not a book for beginners, but it is an admirable book to be put into the hands of students who have had some practice in algebraic manipulations and wish to study algebra seriously.

The First Book of Geometry. By Grace Chisholm Young and W. H. Young. xvi.+222 pp. (Dent.) 1s. 6d. net.—The point of view from which geometry is considered in this book is that "it is essentially a subject for home and for an early age," requiring no schoolroom, no blackboard, and no special apparatus. The prime importance of solid geometry is recognised, and directions are given for the construction of models, the only apparatus needed being paper, occasionally a few pins, a pencil, and a pair of scissors, the latter not being absolutely necessary. In treating of plane geometry, paper-folding is the principal method of illustrating and demonstrating the leading notions and theorems; proofs by cutting out are avoided, and no stress is laid on accurate drawing, as the latter is too difficult for small children and the former does not lend itself to repetition. We have read the book with unusual interest, and, after trial of many of the processes described by the authors, can readily believe that they are within the capacity of young people, and quite likely to arouse and sustain their attention. An excellent feature of the book is that it is not a text-book to be learnt; it is meant "to aid the child to achieve things and to acquire ideas which will not be uninteresting at the time and will be subsequently invaluable." We are not quite sure how the work outlined in the book could be adapted to school use in its entirety, but there is no doubt that much of it could be arranged for, and that the gain to the pupils would be great. We cordially recommend this book to the attention of teachers and parents.

Elementary Modern Geometry. Part I., Experimental and Theoretical. By H. G. Willis. viii.+236 pp. (Clarendon Press.) 2s.—Part I. treats of triangles and parallels in four chapters. The first chapter is experimental and practical; the second bears the title "First Principles"; the third discusses problems on straight lines and triangles; while the fourth is devoted to parallels. The treatment differs in many ways from that adopted in recent books, and considerable use is made of the principle of continuity, while some attention is given to properties of figures that are true in other than Euclidean space. A considerable part of the second chapter seems to us unsuitable for a book designed for schoolboys, and the number of alternative proofs is, in our judgment, rather against than in favour of the book for school use. The author has evidently a competent knowledge of recent discussions on the foundations of geometry, and several of his proofs are simple and ingenious, but we do not think that the book, as a whole, is very satisfactory.

The Winchester Arithmetic. By C. Godfrey and G. M. Bell. ix.+199 pp. (Cambridge University Press.) 3s. Also a Teachers' Edition, 6s. net.—This Arithmetic is essentially a collection of exercises, there being little or no explanation of the processes involved. The various sets are well arranged, and there are numerous examples for oral practice; hard examples are the exception rather than the rule, while the interest is maintained to a considerable extent by a greater variety in the choice of the exercises than is usually found in current text-books. In several respects the order of taking up the different parts deviates from the traditional one; thus the treatment of decimal fractions is interwoven with that of the metric system, decimal fractions preceding vulgar. Considerable space is given to logarithms and graphs; the exercises on logarithms are exceedingly good, while those on graphs are sufficient to illustrate the simpler applications of the graphical method. Negative numbers are introduced at a very early stage; while we think it very necessary to generalise arithmetic before beginning formal algebra, we are inclined to hold that operations with negative numbers are here introduced too early. The teachers' edition gives answers on interleaved pages; the notes in it, though occasionally useful, are of no great value. As a collection of exercises, this Arithmetic is good and sensible; we should have liked to see a well-written text accompanying the examples.

Arithmetic for Schools and Colleges. By John Alison and John B. Clark. viii.+471+xlvii. pp. (Oliver and Boyd.) 4s.—The first part of this book was very favourably noticed in THE SCHOOL WORLD, vol. v., p. 393. The additional matter in the completed volume includes a chapter on logarithms, chapters on commercial arithmetic (compound interest, stocks and shares, &c.), mensuration, problems, scales of notation, and graphs. The exposition maintains the high level reached in the first part, and the book, so far as can be tested by reading as apart from class use, is thoroughly satisfactory. The examples, worked and unworked, are numerous and varied, so that the pupil has ample opportunity for practice; but in our judgment the book is even more valuable for the teacher. Chapter vi., on the laws of operations, is the best introduction we know of to a systematic course of algebra as generalised arithmetic, while throughout the work attention is constantly directed to the reasons for the various processes illustrated, so that the tendency for arithmetic to degenerate into a mere collection of rules is greatly checked.

A Class-book of Arithmetic. By Charles Davison. x.+285 pp. (Longmans.) 3s. (Without answers, 2s. 6d.)—This book does not differ in any notable degree from many of the text-books in common use, except that—rightly, as we think—less attention is paid than usual to certain parts of commercial arithmetic. Considerable stress is laid in later sections on abbreviated methods, and the collection of problems is—very sensibly, in our opinion—not grouped according to subjects. The exercises are very numerous, many of them being oral. The remark in § 5 on the relation between brevity and accuracy is good, and is not usually sufficiently attended to.

Elementary Dynamics. Second edition, revised. By W. M Baker. x.+318 pp. (Bell.) 4s. 6d.—The changes introduced in this edition are all in the right direction, and add to the value of the book. The general method of treatment follows the lines that are so familiar in elementary text-books that it hardly seems to be necessary to specify them. While objections might be urged to certain definitions, the exposition is as a whole very simple, and the large number of worked and unworked examples is a special feature for which the candidates in training for examinations will be grateful. For the type of student whom the writer seems to have in view the book is likely to be very serviceable.

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Practical Mathematics. By H. A. Stern and W. H. Topham. xii.+376 pp. (Bell.) 4*s.* 6*d.*—The first nine chapters of this book have already appeared under the title "Elementary Practical Mathematics," and have been noticed in The School World, vol. vii., p. 277. The book before us contains twenty-five chapters, with an appendix, and covers in a singularly clear and satisfactory manner a very wide range of subjects. It would be a very great advantage if the study of theoretical mechanics were accompanied by the practical course laid down by the authors; and teachers who wish the study of mechanics to be something more than the manipulation of mathematical formulæ would do well to give this volume a careful examination. The title of the book is not, we think, quite happily chosen; though one or two chapters are mathematical. The chief interest and value of the book lie outside mathematics, as that word is commonly understood.

First Lessons in Number: an Introductory Arithmetic. By W. J. Browne. viii.+112 pp. (Londonderry: John Forrester.) 1*s.*—It is stated in the preface that these lessons "are intended to supply an easy and scientific introduction to arithmetic, and to suggest an improved method of teaching it." While there is no doubt that arithmetic is often badly taught, yet there is no lack of text-books that may lay claim to being scientific and, when properly used, also easy. The improvements recommended in this book do not always seem to us to be new, and some are, we think, rather trivial. At the same time we are glad to note that the book seems to be written from a desire to make the subject thoroughly interesting to children and contains many useful hints for teachers.

Branfill's Curves for Square Measurement. (Penrose.) Price in London, each, 2*s.* 6*d.*—In the circular which accompanies the curves it is stated that the purpose to be served by them is to enable the size of blocks to be measured rapidly in square inches (or in square centimetres). Essentially the apparatus "consists of a card printed with a series of curves drawn according to a certain rule, this card being mounted in an oak frame with glass front." The manner of using the device is exceedingly simple, and the curves, so far as we have tested them, give good results. The area of any flat rectangular object of smaller dimensions than 14×10 inches can be found with great ease. For certain classes of work the curves should be very useful.

An Elementary Commercial Arithmetic for Continuation and Commercial Classes. By Pollard Wilkinson and William E. Watkins. vi.+149 pp. (Philip.) 1*s.* 3*d.*—Also, *Answers to Commercial Arithmetic.* 25 pp.—The book seems to be of a kind that will be found useful by the particular class of pupils whom the authors have in view. In this edition a chapter is added on quantities and estimates in the building trades, while additional examination papers are also given.

The "Council" Arithmetic for Schools. Scheme B. Part viii. By T. B. Ellery. 397–460 pp. (Black.) Paper covers, 4*d.*; cloth, 6*d.*—This part is constructed on lines similar to those used in the earlier parts. In addition to exercises revising and extending previous work, the subjects of square root and cube root with applications to mensuration are taken up pretty fully; questions in alligation and problems on trains, clocks, &c., are also given. Some useful formulæ in mensuration, with appropriate diagrams, are printed on the inside of the covers.

The Primary Arithmetic. Part iii. Edited by Wm. Briggs. 96 pp. (University Tutorial Press.) 6*d.*—Takes up Stage vi., Weights and Measures, and Stage vii., Vulgar Fractions (Supplementary Course). The explanations of rules are brief but clear, and the exercises are not too artificial. The book is well arranged, and the section dealing with the mensuration of simple figures is particularly good.

Vernier Rule and Scale. (London: W. H. Harling.)—The instrument has been designed by Mr. S. Irwin Crookes, of Battersea Polytechnic. The vernier attachment slides in a slit cut parallel to the edges of the rule, and enables readings to be made on both edges and on both sides of the rule; one side is graduated for inches and centimetres, the other containing degrees and a barometer scale. The design is very simple, and the instrument sent us works very smoothly.

Science and Technology.

Philips' Large Planisphere. Designed by H. Gewecke. (Philip.) 6*s.*—All the stars visible to the naked eye in the part of the celestial sphere extending from the north celestial pole to 33 degrees south of the celestial equator are shown in their relative positions, with names of constellations, upon a disc, twenty inches in diameter, which forms the planisphere. Upon this star chart can be placed another disc slightly smaller, and having a circular part about thirteen inches in diameter cut out. This disc forms a detachable horizon, and by adjusting the divisions around its edge to divisions around the edge of the star chart the part of the sky visible at any time of night, or year, can be seen in the circular space not covered by the disc. It is also possible to locate upon the planisphere the position of an object, such as a comet, when its celestial co-ordinates are known. The planisphere is an ingenious device for enabling a student to become familiar with the face of the heavens, but the small form in which it has been available for many years is much more convenient than the large one just published. The advantage of being able to locate an object from its co-ordinates is undoubtedly great, but the student who wishes to do this would find a star atlas more suitable for the purpose than this planisphere.

Psychology. By Dr. C. W. Saleeby. 1–122 pp. (Jack's Scientific Series.) 1*s.*—This is not a primer on psychology; but rather a plea, now being widely recognised, for the physiological study of mind. It goes along with the work of Prof. MacDougall; and it treads on ground which is, as yet, scarcely mapped out at all. If such books lead to a work-a-day psychology they will confer a boon on the teachers who have so long been struggling with "words, words, words."

Examples in Physics. By C. E. Jackson. vii.+172 pp. (Methuen.) 2*s.* 6*d.*—A convenient collection of problems in the subjects of physics usually studied in secondary schools. The book is divided into two parts; the first consists of questions covering the work of a three years' school course, and the second provides problems up to the standard of scholarship candidates. Answers to the questions included in the first part of the book are given at the end of the volume.

Miscellaneous.

Hazell's Annual for 1906.—The twenty-first issue of this well-known year-book is as useful and conveniently arranged as ever. Many foreign biographies have been added this year, and the text of many recent documents of great international importance. Among other new features must be mentioned the reports of several Royal Commissions. A section of twelve pages deals with education, and though important questions are dealt with very briefly and

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many omissions have proved necessary, the information given is correct and helpful. The convenient alphabetical arrangement of the subjects included makes "Hazell's Annual" peculiarly suitable for a school reference library.

The Sa'-zada Tales. By W. A. Fraser. xii.+231 pp. (Nutt.) 6*s.* net.—"All his life Sa'-zada the Keeper had lived with animals. That was why he could talk to them, and they to him; that was why he knew that something must be done to keep his animal friends from fretting themselves to death during the dreadful heat that came like a disease over their part of the Greater City. . . . It was because of this that Sa'-zada said, 'I must make them talk of their other life lest they die of this.' . . . So he had contrived that all of the Peace-kind—the Grass-feeders and others—should come from their cages and corrals and meet each evening in front of the iron-bound homes which contained those of the Blood-kind, to tell stories of their past life." The book is a report of the stories they told. It is a good idea and an ambitious one. But Mr. Fraser's animals talk slang and "cheek" each other in a schoolboy manner that jars a little on the reader who remembers "The Jungle Books." It is, possibly, hardly fair to judge the book by the standard Kipling has, once for all, set in this sort of writing, and it may be safely said that most boys will read the tales with delight. The twenty-four full-page illustrations, and smaller sketches, by Mr. Arthur Heming are in every way admirable.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Graphical Representation of History.

TEACHERS of history are all sadly acquainted with the immense difficulties which their pupils experience in learning to retain a connected and logical account of historical facts: so many things must be remembered, but not as isolated facts—this is impossible, as well as unscientific; they must be grouped together by the interest which attaches itself to the life of one man or of one cause.

This is, of course, the barest commonplace to those who are acquainted with the teaching of history, and the object of this letter is to show how the above principle may be more efficiently applied by a new and vivid method—the method of graphical representation. It is almost impossible to overestimate the vast importance of representing any continuous process by graphical methods, *i.e.*, by curves. Now, history is pre-eminently a continuous development or decline of ideas, of causes, of struggles, which can be as truly represented by curves as can any process in physics.

There can, of course, be no final standard of accuracy introduced into this method of representation, but concerning the general outline of a curve representing the progress of any given historical theme there can be no dispute. As an example of this vivid method of unifying and simplifying the teaching of history we may take the wars of Henry V.'s and of Henry VI.'s reigns in France; the various increases of the English authority in France may be measured along one ordinate, and the time in periods of one, two, or five years (according to convenience) along the other. It is manifest that such a curve can be constructed from two points of view, that of English success or failure, and that of French; the maxima in one curve will correspond to the minima in the other.

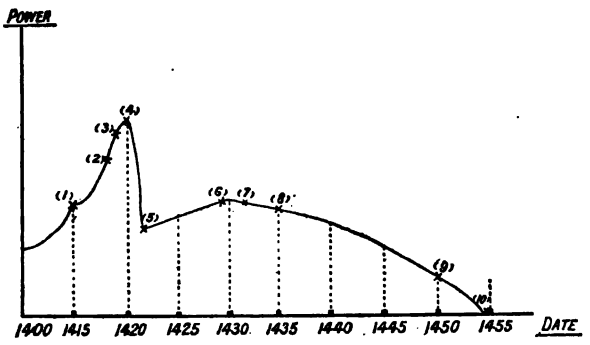
Pupils will take a real interest in plotting such curves, and the following are only a few of the advantages to be obtained by the introduction of this method:—

(i.) It unifies a series of events by showing how they are connected with the rise, growth, and decline of a cause or policy.

(ii.) It shows the relative importance of events; an event of great importance produces a steep incline or decline on the curve. Here it may be remarked that, as the importance of an event cannot be measured by any absolute standard, a certain latitude is allowed in plotting the curve, and this latitude will lead to a most useful and important exercise of judgment on the part of pupils.

(iii.) It secures the service of the eye as an aid to memory.

(iv.) It absorbs the interest and satisfies the activity of the pupil by providing him definite historical work. The



RISE AND DECLINE OF ENGLISH POWER IN FRANCE, 1415-1453.

KEY TO DIAGRAM.—(1) Battle of Agincourt. (2) Caen taken by English. (3) Rouen taken by English. (4) Treaty of Troyes. (5) Battle of Baugé. (6) Siege of Orleans. (7) Joan of Arc burnt. (8) Death of Duke of Bedford, and Burgundy breaks off his alliance. (9) All Normandy lost. (10) Battle of Castillon.

importance of this will be realised by those who have experienced the difficulty of keeping the attention and interest of the pupils fixed on a continuous narrative, whether given by the teacher or read from books.

Salford. G. W. KNOWLES.

Military Training in Schools.

LORD ROBERTS, addressing a general meeting of the Incorporated Association of Assistant Masters on January 5th, 1906, advocated elementary military training and instruction in the use of firearms for all schools, public and private. The arguments upon which he based his advocacy were the need of a large army to maintain Imperial defence, and especially of a number of men capable of acting as reserves in the future if necessity arose. He appealed to the patriotic schoolmaster to point out to his boys that the national honour must be defended, and that this must be done by their embracing at the earliest opportunity a course of instruction in things military, and thereby fitting themselves for possible service in the field. Practice with rifles, either miniature or of the regulation size, might be begun at the early age of ten. The knowledge how to carry out simple evolutions in the field might be inculcated at the same time. The War Office might regulate such military training in schools, and the Treasury provide all or part of the funds. The work should be made popular and attractive, or rather its natural attractions should be enhanced, by such adventitious inducements as will occur to the mind of every schoolmaster. He suggested, but perhaps only in a spirit of banter, that

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classical studies and even games might be subordinated to the more important question of the Cadet corps or the rifle brigade. We have this choice or we have conscription. The schoolmaster must lose no time in addressing patriotic homilies to his pupil, to the effect that our enemies are increasing, and that our doom is imminent unless the boy takes this lesson to his impressionable heart—that in him, made a potential soldier, lies the safety of his country.

His address was received with acclamation, either from deference to its author or approbation of its principles. We wish to point out certain grave objections. The patriotism of the meeting we admire and share, but the resolution which it inferentially passed we heartily condemn.

The objections to the proposals of Lord Roberts are threefold. There are the practical objections which the schoolmaster as a specialist in time-tables may raise. To mention these is not the purpose of this article. We propose to discuss the political and the moral objections. Politically, we are aghast at the increased expenditure which the carrying out of these schemes would necessitate. The formation of a staff of school instructors would mean money. The necessary guns and ammunition would mean money. The stimulus of a uniform, which one headmaster, speaking after Lord Roberts, said was attractive to every healthy-minded man, would be found essential, or be thought to be essential. Military training requires field-days, and the expense of money entailed would not make for retrenchment. In the large so-called public schools of England and Scotland, which are supported by the wealthier classes, the necessary money would come out of the pockets of the parents, until they, too, applied to themselves a subsidy not originally intended for them. It is terrible to think to what lengths our fear of foreign countries might lead us if it were inculcated almost from the cradle, to say nothing of the effect which a nation trained to international suspicion would have upon the mind of Europe.

The moral objections are still more grave. It is a serious responsibility to implant in the minds of boys this military spirit, this distrust of foreign nations, this suspicious attitude towards the great peoples of Europe. Such a step makes for international division, not for international peace. We will say nothing of the effect upon the foreign nation; we are concerned only with the effect upon our boys. In teaching history, nothing is so difficult as to get a boy to see that our foreign relations have not been always without reproach; his natural bias is towards his own nation. Of this boyish championing of his own side it is immoral to make political capital. It may easily develop in manhood into intolerant arrogance and insular prejudice which nothing can shake. In times of delicate negotiation, the level-headed statesman who regards peace as the goal to which, for the country's sake, he must make, will be hampered by the lessons, the new lessons of distrust, which the nation has learnt so glibly; and the dawn of international peace, of which we hope that the Hague Convention is the first glimmer, will be darkened by the successful efforts of those very men who, as instructors of youth, should point out the promise of that hopeful gleam. We shall have a nation shouting out for war while delicate diplomatic negotiations are going on, a nation eager to try the new profession of arms to which it has been trained or at least accustomed, eager to experiment with its unproved prowess.

The military man as an interested party is a danger in time of peace, for he will always vote for those steps which will resolve a life of theory into one of practice. What grave dangers, then, shall we not run if we train the minds of our boys to that outlook! Is not the schoolmaster's duty the very reverse of that policy with which Lord Roberts asked him to be in sympathy? Is it not for him to point out, not at the early age of ten, when the mind will receive all argument as gospel, but to his more advanced pupils if he has them, that "war is a game that, were their subjects wise, kings should not play at"; that the argument that there are worse things than war proceeds from a dulness as to its miseries, economic and human; that war means the negation of the moral code, when killing becomes heroism and theft smartness; that it means a stagnation of trade, not only in the country of the belligerents but elsewhere. And should the schoolmaster suggest a remedy if a boy should have learnt from his parents or companions those very arguments which Lord Roberts brings forward? Supposing him to urge that if all English people thought as his schoolmaster there would be nobody to resist the tide of exultant invasion, is the schoolmaster reduced to a dilemma? There is a body of men, founded during a time of great patriotism, to which all patriots should belong, who are convinced of the envy of foreign nations. The purpose of the Volunteers was to keep out the French, and their position is logical and based on principles of liberty. They are of an age when their action in joining is, or should be, rational. Those who suspect foreign aggression should logically belong to that body, and with their new associates demand for themselves and their cousins in the Militia recognition and support from the War Office. A volunteer service has this advantage over conscript service (and the conscript schoolboy is perilously near this, the most ghastly of political evils), that the reasons for war are more closely examined, and the Government is not tempted to regard human lives as pawns in a diplomatic game. Imperial defence will suffer, and not gain, by assuming the aspect of Imperial offensiveness.

H. G. A.

Demonstration Classes in Esperanto.

I HOPE you will find space for the following suggestion. Esperanto has now become a fact to be reckoned with, and possibly many teachers would like to know more of its principles.

A demonstration class for secondary teachers will shortly be formed at the office of the British Esperanto Association, 13, Arundel Street, Strand. There will be no fees, of course, and the time and day will depend upon the wishes of the majority of those who write to the hon. secretary. I earnestly hope many teachers will take this opportunity of examining the claims of Esperanto at first hand.

E. A. LAWRENCE.

January 9, 1906.

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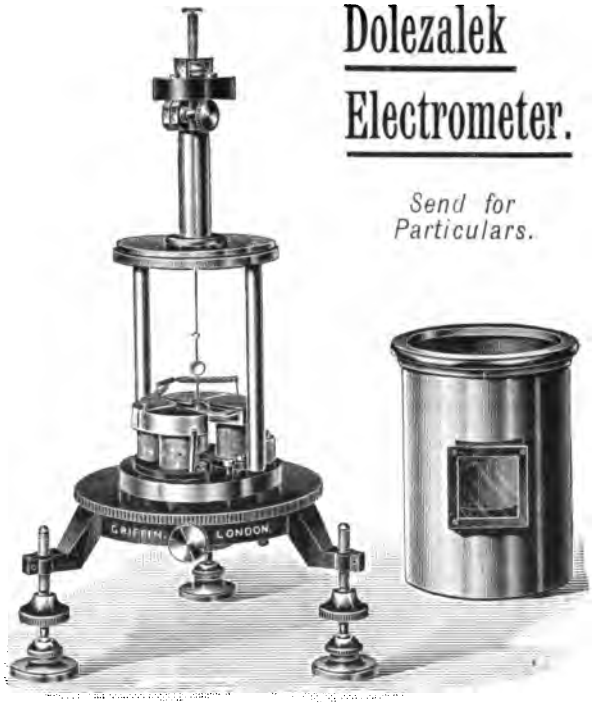

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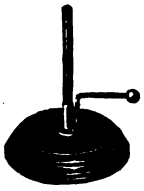

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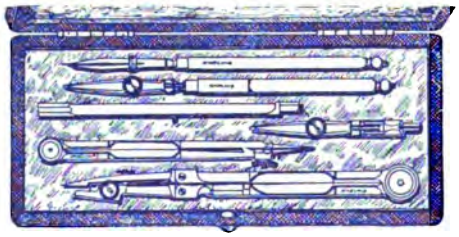

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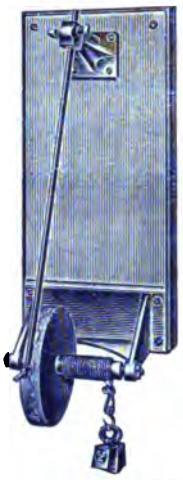

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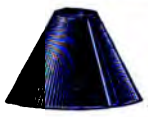

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The School World

A Monthly Magazine of Educational Work and Progress.

No. 87. MARCH, 1906. SIXPENCE.

SWIMMING AS A PART OF THE SECONDARY-SCHOOL CURRICULUM.

By C. H. HEATH, M.A.

King Edward's School, Birmingham.

THAT the art of swimming is of advantage to all boys and girls may in these days be taken as an axiom, and nearly all agree that where it is possible every boy and girl should learn to swim. The facts that bathing and swimming are themselves beneficial to the healthy condition of the skin and body, and that the exercise so taken conduces to a healthy moral tone in boy and girl, are perhaps not so generally known. "Too much," says Dr. Stanley Hall, in his great book on "Adolescence,"[1] "can hardly be said in favour of cold baths and swimming at this age. . . . Cold bathing . . quickens the activity of kidneys, lungs, and digestive apparatus. . . . It is the best of all gymnastics for the non-striated or involuntary muscles and for the heart and blood-vessels. . . . The moral effect of plunging into cold and supporting the body in deep water is not inconsiderable in strengthening a spirit of hardihood and reducing over-tenderness to sensory discomforts. The exercise of swimming is unique in that nearly all the movements and combinations are such as are rarely used otherwise. . . . Its stimulus for heart and lungs is, by general consent of all writers on the subject, most wholesome and beneficial. . . . Nothing so directly or quickly reduces to the lowest point the plethora of sex organs."

These weighty words emphasise two distinct propositions, both germane to our subject, though in different ways. Dr. Hall's advocacy of the exercise of swimming is all in favour of its admission to the school curriculum; his advocacy of the cold bath as distinct from warm points to the advantage of open-air swimming over swimming in artificially heated baths: "the free swim in cold water is most invigorating." With this last point I will deal later. I may now assume that it is admitted that swimming is an art to be acquired where possible, not only for the pleasure it gives and its possible usefulness in the saving of life, whether of the swimmer or of others, but also for its healthy development of the body and production of good moral tone.

Though, within my personal knowledge, girls as well as boys have derived the greatest advantage from learning and practising swimming, my school experience has been entirely with the latter; but while I only quote the experience gained in boys' schools, I wish my arguments to be taken, where the conditions are possible, as applying with equal strength to girls, and as even more urgent in their case, as they have generally far fewer alternative opportunities of vigorous exercise.

First, with regard to treating swimming as a part of the school curriculum, may boys and girls be legitimately taught to swim during school hours?

Where gymnastics have been admitted into the curriculum, there seems no question of the legitimacy of the introduction of swimming, provided (1) that time can be found, and (2) that there are facilities. To meet the time difficulty, I should propose that in the summer term, if necessary or advisable, swimming should, at least to some extent, be substituted for gymnastics, say on two or three days in the week. Two occasions a week would probably be found sufficient, and at least two would be advisable, especially for beginners. The time allotted need not be long.

I know of one school where, with the bath five minutes distant, a period of forty minutes (thirty-five if at the end or beginning of school hours), allowing of twenty minutes clear in the water, is, or was, regularly allotted. The boys went in forms, with their form-master in attendance with a view to discipline, and a form organised from the point of view of attainments in Latin or other class-room subjects naturally contained swimmers of various degrees, ranging from the very beginner to, possibly, the best swimmer in the school. The instructor found time, in a not very large bath, and with classes of about twenty, to give some attention to all, and was able, in addition, to produce some very good diving. There was an advantage in such an unclassified arrangement, that the beginners were able to see others perform who had acquired some skill. Such a system may be recommended as likely to induce as many as possible of the

[1] Vol. i. p. 225.

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pupils to take part in, and to gain benefit from, the lessons. The fee charged, if any, could in that case, I think, be merely nominal. In this school the meetings in school hours were the only occasions when the bath was open for regular use. I would, however, strongly recommend that, where it is possible, boys and girls should be encouraged to go to the bath on other occasions, when they could practise and enjoy swimming and diving under more leisurely conditions. Some looseness of discipline and horseplay may arise where classes of considerable size meet without other supervision than that of the instructor, whose whole energy and attention are required for his lessons and should not be distracted by the need of keeping order. It follows, therefore, that either (1) the instructor must be able to control a class without effort, or (2) the classes must be small enough to be handled easily, or (3) the order of the class must be provided for by other means—by the presence of a master or mistress, or by prefects, or by responsible officers of the school swimming club.

In another school—a large day-school in a provincial city—the conditions are quite different. It has no bath of its own, and uses the central corporation bath. Very few boys live in the immediate neighbourhood, and many come and go daily by train. The whole management lies with a sectional committee of the school club, consisting of both boys and masters, and attendance at the bath is purely voluntary. The section meets twice a week immediately after school in the summer term and at the beginning of the autumn term, the annual sports being held early in October, when the use of the bath is granted free of charge for an evening, in view of the large number of tickets taken by the club. These tickets are issued at a reduced charge of 3d., each boy buying from the swimming secretary. The services of a very competent instructor are secured, who, on one of the two evenings, in his small private bath, takes learners' classes (which also meet, when necessary, on another separate evening), and on the other gives instruction to swimmers. Any discipline required is mainly entrusted to the swimming captain, who, as well as the other good swimmers serving on the committee, is energetic in looking after the younger boys and improving swimmers. The section, since its revival, has now been living a very vigorous life for four years. The annual sports, which include a half-mile race in an open-air reservoir in a suburb, have always been a great success. A large number of boys take advantage of the opportunity of learning, and the school is producing an increasing number of keen and good swimmers. A "house" system exists now for all athletics, and the house races, in which three teams from each house take part, add zest to the competitions, and provide an incentive to improve to a large number of swimmers, many of whom will do for their house what they are not keen enough to do for their own advantage. Thus use is made of public spirit to improve the swimming, and, what is even better, of swimming to increase public spirit and diminish pot-hunting—the danger of all sport where individual prowess is aimed at.

A combination of the two methods sketched above seems an ideal one; the inclusion of the lessons and meetings at the bath in school hours makes it possible and easy for all who are physically fit to take part; while the responsibility of the boys themselves obtained by making the organisation, at any rate of all competitions, part of the school athletics does away with all difficulties of discipline, and adds greatly to the keenness of the work and the enjoyment of the sport.

It will certainly increase the usefulness of the training if competitions of some kind are introduced to stimulate energy and interest in the right direction, which is the best means of securing good order, and to focus the exercise and development of the faculty. The competitions may be more or less formal races, or may consist partly in winning certificates for various distances, the certificates being either endorsed or renewed if the time is improved subsequently. I have found these certificates produce excellent results, and the attempts, if properly supervised, need not lead to overstrain. Long-distance trials should be discouraged in most cases for boys, and in all for schoolgirls, the fact that they tend to make a swimmer slow being a sufficient, and true, reason to assign. Swimming under water for any length of time is a great strain on the respiratory system, and should be discouraged; in moderation, however, it is good to train the eyes to see under water. Diving is splendid training for the cultivation of steadiness and equilibrium of the body, and "neat headers" are not only pretty to look at, but interesting to practise.

All schools which make swimming a school subject should provide instruction and practice in the methods of saving and restoring life. The Royal Humane Society has for many years offered medals to certain schools for annual competition in the methods of rescuing the drowning and of the resuscitation of the apparently drowned. Two dummies, one to float on the water and the other weighted to lie on the bottom, are all the necessary apparatus. Valuable information and assistance can also be obtained from the Royal Life-saving Society.

The questions remain, whether every secondary school should or should not possess a bath of its own, what should be the nature of that bath, and what its cost might be. It being admitted that every boy and girl should learn to swim, and that it is desirable to introduce swimming as a subject into the school course, it follows that every school should have access to a bath. In most, if not all, of our large towns good public baths are available, but, even in the case of schools which have ready access to them, there are obvious advantages in the possession of baths of their own, the chief of which are (a) the control by the school authorities over the

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changing of the water and the proper cleansing of the bath, which is by no means always satisfactory even in apparently well-managed city departments; (*b*) the avoidance of the danger of infection from outsiders using the same bath; and (*c*) the freedom of the bath for use whenever the school wants it. The only disadvantage is one of cost of making and of up-keep. It might appear a good plan in some cases for a few schools, especially schools on a single foundation or under a single management, to combine and possess a bath in common. Apart from the difficulty of management, there would remain the task of drawing up a time-table to suit schools which might require to use the bath at the same hours. Such difficulties would no doubt be overcome in cases where such a partnership was the only means of obtaining a bath.

A swimming-bath may, however, be of various kinds, from an expensive separate building with heating apparatus to a platform or shed on the bank of a river, lake, or pond, or the sea-shore. Where natural facilities of the latter kind are available, the matter of expense may be very small. The position chosen must be safe for beginners, *i.e.*, there must be shallow water without currents, its limits being plainly marked, and some deeper water of greater or less extent, also without dangers, for good swimmers. Such bathing-places would be furnished with good diving-boards. Many country schools, and certainly one ladies' college, as well as the University Swimming Club at Cambridge, possess them, and the London County Council and other City authorities provide them in their parks and other open spaces. Where such natural opportunities do not exist, an open-air bath with concrete bottom, provided with a dressing-shed, and properly screened from public view, is an excellent substitute, and would be well placed on the school field, where, if it were large enough and abundant clean water were available, it might be freely used after games. A specially constructed bath building would, of course, be more expensive, and might cost possibly between £3,000 and £5,000. The water in a closed building is cold, and heating apparatus would be required. The bath could be boarded over and used for other purposes—gymnasium or workshop—in the winter. With heating apparatus, the bath could be used all the year round, but this may be regarded as a luxury. A swimming-bath should, however, never be overheated, so as to produce slackness or fatigue, or to induce remaining too long in the water. On the other hand, all longer trials will naturally be made in fairly warm water to avoid cramp, and consequently will take place at or near mid-summer where the water is not artificially heated.

I am indebted to various friends and public officials for particulars as to the cost of baths in different places. At one school the dimensions of the bath are 60ft. by 20ft., with a depth varying from 6ft. to 3ft. 6in. About 35,000 gallons would therefore be required to fill it. Every week the water is entirely changed once, and partially emptied and replaced on another day. For the last five years the average quantity used has been 608,000 gallons, at an average total cost for the summer term of £20 15s. (including two guineas for meter, and an extra charge of 25 per cent. for high service). In 1905 it was £17 12s. 9d. for 481,000 gallons. The cost per 1,000 gallons from the main varies in different places from, say, 6d. to 1s. 3d., 35,000 gallons costing from 17s. 6d. to £2 4s., on the assumption that about 250,000 gallons are taken in the quarter; the charge would be less or more according as the quantity taken exceeded or fell short of that amount. At Birmingham, unless special terms could be obtained, 608,000 gallons spread over two quarters would cost a little over £35, and 481,000 something over £30. At one of our large public schools, where over 400 use the bath daily, and can use it twice a day, the bath (70ft. by 26ft.) is filled, on the average, once a week at a cost of about £2 2s. 6d. To these charges must be added the cost of heating, and of the attendant or engineer.

All these figures are for water from the main; it must, however, be stated that such water, when supplied from open-air sources, *e.g.*, the Welsh water of Birmingham, is found to become discoloured very quickly in the sun's rays, and such water would never look clean in sunny weather; soft water, too, is very solvent, and becomes dirty much sooner than hard.

If water were obtained from a private well, I am advised that "the sinking of an artesian well and bore-hole may cost anything between £1,000 and £1,500, to which must be added from £1,000 to £1,200 for pumping machinery, steam boilers, &c."; and that "in respect to the up-keep, you cannot estimate at less (for water-supply and all) than £25 per month during the summer months."

To sum up—

(1) Every boy and girl who is physically fit should be able to swim well, and should be given an opportunity of learning.

(2) The subject of swimming may legitimately, and, where necessary, ought to, be introduced into the regular school curriculum.

(3) Swimming practice out of school hours should also be encouraged by competitions and certificates.

(4) The organisation of competitions and out-of-school swimming should belong to the school club.

(5) It is the duty of public authorities to provide clean, well-regulated swimming-baths for all classes of the community, and to give facilities for the use, at reduced rates, of their first-class baths to pupils of secondary schools.

(6) Where public baths are not accessible, every secondary school should possess a swimming-bath, or bathing-place, where swimming is regularly taught and practised. Where public baths are available, a school bath is not necessary, but is of great advantage.

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THE LABORATORY ASSISTANT.

By G. F. Daniell, B.Sc.
Mercers' School, London.

ALTHOUGH one finds frequent reference to the "laboratory assistant" or "laboratory steward" in recent school text-books, it is a matter of common knowledge that in many schools the necessity for such a person is not recognised. I use the word "necessity" advisedly, as twenty years of experience has convinced me that the work of a modern science department cannot be maintained permanently at a proper level by the unaided science-teacher. Further, the casual assistance of a few keen but inexperienced pupils, although highly beneficial to the pupils themselves, is inadequate for the fulfilment of the work to be done. What is this work? The requirements will differ not only with the character of the school (as is obvious), but also to a great extent with the individual methods of the teacher. But the following statement of what I regard as reasonable shows pretty fairly the work that the laboratory assistant should do.

His Work.

His primary duty I take to be the stewardship of the fittings and apparatus. He should make, and periodically revise, a complete inventory of the apparatus—one copy for the master, and one for his own use. He should keep a breakage book, and enter all breakages or waste of chemicals; and the master should examine and countersign this, say, once a fortnight. There should always be a sufficient reserve of apparatus to meet accidents, and the assistant should inform the master about three weeks before the end of term what "re-fills" are wanted for next term. The cleaning of his own apparatus by the student is a vital part of the discipline of chemical study, but this is not a reason for dispensing with the services of a laboratory assistant—on the contrary. No judicious time-table could be constructed which would allow all the necessary cleaning in the laboratory to be performed by the boys, and beyond a limited amount such cleaning becomes mere bottle-washing, not particularly educative, and calculated to injure the scientific aims of the work. (I assume that the aim of our school science is to give a training, not technical, but both scientific and manual.) Moreover, the boys who are most benefited by such cleaning are the clumsy and untidy, and their reform is a step in that regeneration in minor moralities which a science-master esteems no insignificant part of his duty to the common weal. These boys will, of course, be the slowest, and as a matter of class-management one should set a standard below which no boy can fall without unpleasantness ensuing. Practically, this can be done by insisting that every boy or pair of boys should keep clean and tidy the cupboard, &c., and apparatus allotted to him or them, the laboratory assistant undertaking all the rest except scrubbing the floors. Material slovenliness being effectually banned, the master is better able to cope with mental slovenliness—the foe whose conquest is the schoolmaster's hourly task. I have dwelt on this point at some length lest an amateur in authority (perhaps a chairman of governors) might object to the appointment of an assistant on the ground that "the boys' capacity of doing things for themselves would be injured."

In the holidays the benches will require oiling; lantern-screens should have their surfaces renewed; all steel parts of apparatus should be rubbed bright and vaselined; all the maps, charts, diagrams, blinds, &c., seen to; retort-stands and other iron-ware blacked or painted; mercury distilled; labels renewed; small joinery jobs executed; new lecture-apparatus constructed. This is the time for stock-taking, and for work which, on account of occupying much space or time, would impede the routine of term-time.

Senior boys who are engaged in volumetric or gravimetric analysis should prepare their own standard solutions. But the ordinary stock solutions used by all the forms working at practical chemistry should be made by the assistant. I find it convenient to write a list giving the simplest instructions for making up two litres of each. With the exception of a few somewhat critical reagents, this can be carried out by a careful assistant without presupposing much knowledge of chemistry. The remaining duties can be conveniently considered as preparation for classes scheduled as (*a*) practical chemistry, (*b*) practical physics, (*c*) lecture.

For (*a*) there will be extra flasks, glass tubing, india-rubber connections, and extra chemicals to be set out on the benches, and certain apparatus to be ready in reserve where opportunities are afforded for boys to devise their own procedure—which should be frequently the case. Personally, I am opposed to "set-up" apparatus, but it is unwise to make a rigid rule in this respect. Occasionally a short demonstration will be required at the master's table.

For (*b*) with junior forms the preparation is similar to the above. For more advanced classes a copy of the course of practical physics should be framed and hung in the laboratory. A corresponding list of apparatus required for each experiment should be drawn up with attention to minute details, and kept by the assistant. The master merely writes the numbers of the experiments against the names of the class. (It is a decided economy of teaching energy to have apparatus *duplicated* when it cannot be multiplied so as to supply all the class simultaneously. Thus, two pairs of boys can be taught tutorially and at the same time.)

With reference to (*c*) I am disposed to depart from the practice copied from university and technical colleges. In my opinion, the lectures should not aim at covering the subject to be studied, but be more modest both in method and objective. The defect of laboratory work is that disproportionate value is apt to be attached to

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experimental detail, so that the main principles are obscured or even totally missed. The lectures should, in the first place, correct this defect by illustrating with the utmost clearness the fundamental concepts and generalisations. In the second place, they should supplement the laboratory work by demonstrations, which, by reason of their difficulty, risk, or expense, are less suited for performance by boys. It is unnecessary to treat in this article of the great variety of types of lecture useful occasionally but infrequently. After this statement, my readers will perhaps learn without a shock that I am prepared to sacrifice lecture-assistance rather than laboratory-assistance. If the laboratory assistant arranges the older, well-worn experiments, and puts ready the materials for new ones, the final setting-up and adjustment of the latter forms an admirable training for senior pupils who are specialising on the science side. It is true that this arrangement is apt to try the patience and nerve of the science-master, and to consume more of his time than if he did the preparation himself, but the value of the training to the boy-demonstrators is great. But, however the work of preparation be carried out, there remains the clearing up afterwards, and the setting up of diagrams, looking after limes and oxygen or carbons for the lantern, &c., duties which naturally fall to the laboratory assistant.

Even in Government colleges and schools it is recognised that experimental work necessitates some petty-cash expenditure. The assistant should have, say, 10s. advanced to him for this purpose from time to time as required, and should keep an account-book, to be countersigned by the master. By cyclostyling and stencilling he can render useful aid, and where the electric current from the mains is available the assistant should charge and test accumulators.

The above does not pretend to exhaust the duties or utilities of the laboratory assistant, but the writer hopes that this incomplete statement may help those who are applying for assistance, which ought not to be withheld where efficiency is expected.

His Cost.

One has to recognise the impossibility of laying down advice as to the position and remuneration of the laboratory assistant, except in general terms. At the same time, it would be shirking the chief difficulty of my task not to offer some suggestions on this problem. My readers will probably have realised that I have had in mind as the assistant that ought to be—

1. A responsible man, not a boy; giving most, if not all, of his time.
2. A man accustomed to method and to write neatly, *able to use tools;* a handy man.
3. A man not above the work, *i.e.*, willing to do all the cleaning, brass-polishing, and washing-up required.
4. An observant man, who will be interested in experiments.

I have said nothing about previous knowledge of chemistry and glass-working. These are desirable accomplishments, but sufficient of them can be acquired in a few months to make the man more useful than a boy of five times more theoretical knowledge. In eighteen months the man should be thoroughly competent for his particular duties, without becoming so accomplished as to be sought after for higher work. One admits that all scientific knowledge adds to an assistant's value, while glass-working is specially useful. But if our cloth be limited, we must consider what part of our coat can best be curtailed. My personal experience leads me to insist on the requirements stated above rather than on previous knowledge. I am of opinion that it is unwise to combine, or rather confuse, the position of junior science-master with that of laboratory assistant. From the Army, Marine, or Navy, the Reserve man with a good education certificate would be likely to suit at 20s. to 25s. per week. This suggestion is not for those who can afford to pay a skilled mechanic, but the latter's pay is often better than that of an assistant master.

The Sixteen-year-old Assistant.

A few years ago I made an inquiry as to the manner in which several schools in or near London dealt with this matter. In every case I received a courteous reply from either the head- or science-master, and I learnt that—

(*a*) several had no laboratory assistants, and all felt the want severely;

(*b*) a few had one or more youthful assistants—some quite satisfactory, some otherwise;

(*c*) three had men assistants, and considered them indispensable.

The pay given in class (*b*) varied from 5s. to 20s. per week. In one or two cases, boys in the school were paid a few shillings a week to wash up and help generally. This I consider a bad system, although special circumstances may have justified its adoption in a particular case. The unsatisfactory result in certain cases is at least a warning that the sixteen-year-old assistant is not always a blessing. Where the result with youthful assistants was most satisfactory, it had been the rule for them to earn promotion to considerably higher work before long, and the prospect of such promotion was the main inducement held out to fill vacancies. While writing this article, I received a letter from probably the best school adopting this system, asking me to recommend a youth "any age above sixteen, the pay to be 12s. 6d. rising to 20s. per week." But I think—perhaps wrongly—that a boy whose parents can afford to send him through a college course had better be so sent. For the clever poor lad with enthusiasm for science there are scholarships, and in large towns there is access to advanced classes at very moderate fees. In the country districts, conditions are far different, and, although not the best, the sixteen-year-old assistant in any case is far better than none, and exceptionally is very good. The drawback remains that, by the time he is thoroughly trained

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and knows where everything is, he moves on. There are moreover drawbacks, of which schoolmasters scarcely need a reminder, to the employment of paid youths in a position to some extent supervisory over those of their own age.

Results.

It is perhaps worthy of mention that two of the schools sending replies belonged to the "great public schools." One had no laboratory assistant, and its pupils won no distinctions in science (this was in 1896); the other had two men assistants, and was easily first in England in respect of open scholarships and university successes in science. But it is for the truly higher purpose of promoting efficiency throughout the school, and in the middle forms particularly, with the moral as well as intellectual lifting of the standard of work, that I urge that the laboratory assistant is a necessity for the maintenance of a modern scientific department at a permanently high level.

SCHOLASTIC AGENCIES.

By Fred Charles, B.A.
Strand School, London.

Of the tenure of teachers, of their appointment and dismissal, much has been said; of the steps preliminary to appointment, there has been but little discussion, although there is some discontent. To be compelled to have recourse to an agency is considered by some an indignity, and to have to pay an agency a hardship.

The great public schools are in such close touch with the universities that they can without difficulty find the men they want, often from among their own old boys, often by the personal recommendation of heads or professors, almost always without resorting to either advertisement or agent. The head of a small school is in a very different position; neither his influence nor the offers he can make will attract, surely and at once, the nominees of university magnates. On the side of the teacher the conditions are similar; the high-honoursman may receive suitable offers, the blue may be so eagerly sought after that he requires no introduction, but the rank and file, the mere passmen, generally require a helping hand. The would-be teacher who has not been to Oxford or Cambridge is in a still worse plight; he has no means of ascertaining where to get a footing but by applying to an agency, the charges of which absorb an appreciable part of his first term's very modest salary. With what result? He probably finds himself strongly put forward for, and bustled into, a post for which he is but imperfectly fitted. The first consideration of the agent is to fill the posts, and it is conceivable that, rather than not fill a vacancy, he will recommend a man who will have to move on at the end of a term. Further, he is dependent on the headmaster for business in the future, so must satisfy his present needs by quietly moving a fixture if necessary. Hence he adopts the principle that the applicant once on the books is always on the books. The result is distrust of his assistant felt by the head, and very probably discontent with his previously comfortable post felt by the assistant. These feelings quickly react, on the assistant in absence of advancement, and on the head in impaired efficiency. Pence rather than principles produced the professional competitors to these profit-earning agencies, the charges of which are generally 5 per cent. on the first year's salary, though one at least now claims to make "the very moderate charge of 10 per cent. on the first year's salary."

Existing bodies of teachers could, at quite a nominal charge, bring together the heads and assistants among their members. The College of Preceptors and the Teachers' Guild formerly had agencies. The Assistant-masters' Association had not been in existence long before it circulated among its members lists of vacancies. Out of these grew, in 1897, the Joint Agency for Assistant-masters and the Joint Agency for Women Teachers. The College of Preceptors found a home for the one, the Teachers' Guild for the other.

The former is under the management of a committee composed of representatives of the Headmasters' Conference, the Headmasters' Association, the Assistant-masters' Association, the College of Preceptors, the Teachers' Guild, the Welsh County Schools Association, the Private Schools Association, and other similar bodies. Its aim is to enable teachers to find work without unnecessary expense, and the charges have been fixed so as only to cover the cost of working. Upon obtaining appointments, members of any of the bodies represented on the committee are charged 2 per cent. on the first year's salary; on paying cash they are allowed a discount of 20 per cent. Non-members are charged 4 per cent. Since advertisements, owing to the variety of papers in which they appear, and to the smallness of the number of assistants who take those papers, fail to reach many of the men to whom they are of most interest, the agency sends out lists of publicly advertised educational appointments. For these lists a nominal charge is made, and no commission is payable.

The sister agency has the same aim. On its committee are represented the Headmistresses' and the Assistant-mistresses' Associations, the Teachers' Guild, the College of Preceptors, the Private Schools Association, and the Welsh County Schools Association. On obtaining resident or non-resident posts, members of any of these bodies are charged 2½ and 2 per cent. respectively on the first year's salary; non-members 3½ and 3 per cent. respectively. At Oxford the University Appointments Committee and at Cambridge the University Scholastic Agency do similar work at equally moderate charges. The university women-teachers, too, have a co-operative association, to which a registry—apparently

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its main activity—is attached; the subscription is small, and members did not until recently pay any fee or commission on obtaining employment. These agencies are limited in range, and therefore, however good their work, their usefulness is limited. Hence the joint agencies are taken as representative of non-profit agencies.

Since agencies divide thus clearly into two groups, comparisons are inevitable. Both are alike in that their success is very largely—mainly, indeed—dependent on the personality of the agent: he must be a *persona grata* to both heads and assistants; he must possess the confidence of both; he must intuitively recognise what each wants, and help him to get it. All have to contend with the same difficulties, not the least being that a large part of their work is done through the post: testimonials, letters, even photographs are often misleading; the wants of heads in practice and on paper are not always identical. More, perhaps, could be done than at present to meet this difficulty; an enterprising organiser might earn the gratitude of his clients, and save them hours of letter-writing and disappointment, by arranging, about the middle of each term, an afternoon assembly of heads wanting assistants, and assistants seeking posts—a kind of hirings "at home."

The contrast between the two classes of agency is clearly marked. Their objects are essentially different; that of the one is to earn profits by bringing about appointments, that of the other to bring about appointments at the least possible cost. Their work differs slightly; the non-profit agencies have practically nothing to do with the sale of schools or the introduction of pupils; this may perhaps weaken their position with the private-venture schools, but has no effect on their relation to most public secondary schools. The strongest contrast is seen in the cost to the assistant. The one charges 5 per cent. and allows no discount, the other 2 per cent. and allows a discount of 20 per cent. for cash. This is how the profit-earning agency earns its name. Its charge on a post worth £200 a year is £10; its competitor's is £3 4s. If the latter is paid for the work done, the former gets a profit of £6 16s. on an outlay of £3 4s.—a profit of over 200 per cent. In comparing the management of the different agencies—their promptness, their use of telegrams, the appearance of the notices sent out, the frequency of letters not absolutely necessary but suggestive of personal interest—every allowance must be made, for while the one has to consider every penny spent, the other can be lavish and still earn handsome profits. The above figures show clearly how much the professional bodies have saved the assistants among their members by the establishment of their agencies. That there are non-members using the joint agencies, and assistants who have not even tried them, goes to prove that those engaged in secondary education, like those engaged in higher, are "children in business."

From 5 per cent. to 2 per cent. is a big step which very little effort can complete; but why pay at all? The good plain cook, hardly rarer than the good teacher, does not pay even when using an agency! Is an agent necessary? The elementary teacher has not, and never has had, any use for him. He has the *Schoolmaster*. The clergy have the *Guardian*, and only occasionally make use of an agent. Other professions, then, are far less dependent on him than ours. Our main difficulty is the variety of educational papers in which vacancies are advertised. Some local authorities add to the confusion by advertising and, at the same time, communicating their vacancies to the agents. Posts vacant in schools under the London County Council are notified in the official *Gazette*, which might be more widely circulated than it is.

The agent, if he is to continue to exist, should be, so far as the assistant is concerned, no more than a press-cutting agency to collect notices of vacancies advertised and send them to his clients. For this he should be paid as the press-cutting agencies are—according to the number of notices sent. Governing bodies and heads might give him more responsible work; applications might be sent to him and, after being classified, forwarded to the advertiser; or he might be instructed to select a certain number of the best applicants and submit these only. For this he should be paid a recognised fee according to the work done. In no case should his charge depend on the salary attaching to the vacancy advertised or be contingent on its being filled.

The advertisements should either state full particulars or announce the vacancy and salary—with the name of the school—saying from whom particulars can be obtained; the former seems preferable, but if the latter were done the agent might well obtain the particulars and send them out to his clients. The advertisements or further information should be definite and transparently honest. (Even now it occasionally happens that at the last stage of the negotiations the applicant is told that he is one of several, and is then asked to accept less than the advertised salary!) The particulars should indicate clearly the status of the school, the commencing salary and scale of increments, the teaching hours per week, the minimum qualifications required, and perhaps the average number in the classes—"perhaps" because the importance of this has lately been somewhat overrated. Given suitable accommodation, the strain of teaching depends more upon the variety than upon the size of the class. A homogeneous class of forty means less strain than a class of thirty who, though they have done the same work, have done it with very varied results. Apart from its primary object, this publicity would bring many advantages in its train; parents would better recognise the type of school to which their children were going and the class of teacher there; such incongruities as £30 a year at a "college" with many high-sounding titles, under the headship of a "B.A., M.M.L.A.Lon.,

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R.T.C.B.Lon., R.F.C.," would of necessity disappear.

In the future, personal recommendation will be more general than now; training-college courses will make teachers better known to one another; governors, well satisfied with assistants from one college, will send there when in want of other assistants. Schools in which the practical work of the training colleges is done will probably find all their teachers from among those who have practised there. The heads and staffs of the training institutions will become powerful factors in the staffing of the schools. Later still, when head teachers, no long headmasters, have all been trained, these influences will be more powerful, for heads will favour the appointment of assistants from their own old colleges. The training colleges could doubtless give valuable information as to how these factors have operated among elementary teachers, but in making comparison and drawing inferences from their experience it must be remembered that with them the demand is greater than the supply.

But the stage of advertisements in the public press is not the ideal state. That will not be reached until there is one, and only one, association to which all teachers, heads and assistants, belong—an association with a weekly paper and with a habitation of its own. In its paper classified lists of vacancies will be inserted at a nominal cost; the constant use of its habitation will bring together men who can work together; in its deliberations will appear intellectual leaders of the profession; in its management will be brought to light the organising genius among its members. With such an association selection will be easy, and the best men cannot but come to the top.

A SYLLABUS IN GEOGRAPHY.

By George W. Stone, M.A.

Principal of the Salford Municipal Secondary School for Girls and Pupil Teachers' Centre.

THE divisions of the syllabus which follows have been determined by the special circumstances of this school, which consists of a secondary school of about 370 pupils, with a pupil-teachers' centre as its "top," the centre containing about 200 pupil-teachers.

The syllabus, therefore, comprises, in addition to the preliminary instruction, a course for six years. By rearrangement, it may be grouped into fewer divisions, so as to coincide with the more usual four-year course of an ordinary secondary school.

The geography "regulations" of the Board of Education are by no means rigid: if one school has a longer course than another, the work can be done in greater detail, and in a more comprehensive way. The important principle which seems to underlie the regulations is that the subject shall be taught in the best method, and that its parts shall be arranged in the natural causal order, not merely that any exactly defined *amount* of geographical information shall be given. The extent of the information gained is naturally dependent upon the time which is at the disposal of the teacher and pupils.

The preparatory course is an extension of the "preliminary instruction" section of the Board's regulations. Leading from home geography to the various land forms and the forces at work upon them, the teacher proceeds to give a very general view of the world, and the broadest notions of its relief, its river basins, political divisions, and the largest towns. As necessary preliminaries to any real understanding of climate and rainfall, simple yet definite ideas are needed about the causes of winds, the meanings of evaporation and condensation, and the great prevailing winds of the world. The importance of large "snow-areas" in keeping up the perennial water supply of many rivers may be illustrated from nearly every continent.

If pupils commence the first-year course without the stated preliminary instruction, it will be found necessary to include it as opportunity offers in the various "years" of the school. This will account for a certain repetition in the syllabus. It is also intended that the older pupils should gain fuller knowledge of the subject-matter, and reason out the connections between the general physical causes and their effects upon those parts of the earth with which the class is dealing.

In each year's course a large proportion of the time is devoted to the study of general geography, the special details of political geography being allowed less time than is usual. The physical features of Europe, for example, occupy more than half of the second year's course. This makes it possible to treat with fulness the relief of the continent as a whole, the rivers, &c., so that a detailed knowledge of the physical features of each country may be shown in connection with those of surrounding countries. This method proves in the end a saving of time, and gives a more accurate notion of the physical geography of each country. For example, the minerals of Europe are taught so as to show those parts of the *continent* producing the various kinds of mineral wealth, instead of dealing with the subject under the separate *countries*. The rich mineral-producing districts are independent of political boundaries, *e.g.*, the great coal belt stretching from the north-west of France to the east of the Rhine. The aim in the arrangement of the syllabus has been to take in order physical conditions as causes leading up to other conditions, physical and political, and thus indicate the causal links which connect all geographical facts.

Syllabus in Geography.

Sketch Maps: Should be drawn every week by pupils, not as maps of fine finish, but as sufficiently accurate expressions of geographical facts. Answers should be illustrated by sketch maps.

Preparatory Class.—Models of the valleys of the Irwell and Mersey, and of the Wirral peninsula. A visit to, say,

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Prestwich Clough, to illustrate valley and hill formation. Similarity of heights and rocks of the Kersal side and the Pendlebury side of the Irwell valley. The *various land forms* (*a*) found in home geography, and (*b*) illustrated in the British Isles.

Action of Climatic Forces on Land Forms.—Action of water on land. Weathering. Effects of rivers and glaciers. The various stages of river formation. Lacustrine and marine deltas. Hill formation. Floods. The work done by the air modifying the earth's surface.

Action of the Land on Sea Forms.—Destroying and building. Examples from the British Isles.

Mountains.—Varieties of forms. Ranges. Groups. Passes. The general direction of the great world range. Its various parts. Comparative heights. Africa and Australia. Their coastal position. Terraces.

Plateaux.—Their correspondence with the direction of the world range. Secondary ranges as buttresses of the great plateau. The plateaux as desert regions. The position of the great areas of depression, and their parallelism with the mountain systems. The proximity of the lowest and most elevated parts of the earth's surface.

Volcanoes.—Subterranean forces. Formation of volcanoes. Their characteristic form. Extinct volcanoes. Noted eruptions. Earthquakes. Geysers. The positions of volcanoes on the globe. The great volcanic circuits. The effects produced by volcanoes, *e.g.*, the rising and sinking of lands.

The Atmosphere.—Its composition. Pressure of air. Barometer and thermometer treated very simply.

Winds.—The climatic zones. Trade winds. Monsoons. Evaporation. Clouds. Rain. Snow. The prevailing winds of the world. Constant or variable with seasons. The general distribution of rainfall. Its dependence on the mountain system.

The Continents.—In each continent the political divisions and towns should be taught in intimate connection with physical conditions.

South America.—Revision of mountains, plains, and valleys. The division of the continental river basins. The water partings traced. The main political divisions. The most important towns.

North America.—The mountains, plains, and valleys. The height of land. The great northern and southern slopes. The western slopes. The western plateau, and its divisions. The great lakes. The main river basins. Political divisions. Towns.

Central America.—Its mountain system. Isthmus. The Panama Canal. Rivers. Towns.

Africa.—Mountains, plateaux, and valleys revised. Rainfall. The river basins. Water partings traced. The lake region. The Nile. The chief divisions of European influence. The chief towns.

Australia.—The relief revised. Rainfall. The scarcity of large rivers. Causes of drought. River basins. Towns.

Asia.—The relief revised. The prevailing winds. Rainfall. River basins. Political divisions. Chief towns.

Europe.—The relief revised. Prevailing winds. The Gulf Stream. Rainfall. River basins. The countries of Europe.

Throughout the following courses, the physical geography is to be taught in sufficient detail, and in all cases the inter-connection between the various points of physical geography is to be shown. The political facts are to be taught as resulting from physical conditions.

First Year's Course: First Term.—*The British Isles.*—Position. The seas surrounding. Sectional maps of seas. The relief of the land. Water partings. Rivers. Lakes. Plains. The coasts, as connected with mountains, hills, plains, and rivers.

Physical Geography.—Winds and rainfall. Causes of winds. Climatic zones. Trade winds. Prevalent winds of the British Isles. Evaporation. Clouds. Rainfall of British Isles.

Second Term.—Mineral wealth. The soil of the different parts of the British Isles. The most fertile parts. Vegetable productions. How affected by climatic considerations and nature of soil. The industries. Manufactures of cotton. Iron. Woollen goods. Glass, &c. Great industrial centres.

Physical Geography.—Causes affecting climate. The climatic divisions of the British Isles. Latitude and longitude.

Third Term.—The division of the British Isles into counties. The most important towns. Land routes. Sea routes. Commercial relations with other countries. Imports and exports. The broad facts of the economic geography of the British Isles.

Second Year's Course: First Term.—Geography of Europe. A general view of Eurasia. The great mountain range and the northern and southern slopes. The *striking* similarities and contrasts between Europe and Asia. The relief of Europe. Lakes. Rivers. Land routes. How they coincide with the courses of rivers. The coast, as connected with mountain ranges. Plateaux and low plains. Good harbours. Sea routes. The chief islands of Europe. Climate in detail. Effects of westerly winds and Atlantic drift. Rainfall.

Physical Geography.—Ocean currents.

Second Term.—Soil. Mineral wealth, and its distribution in detail. Vegetable productions. Animals. Races. Manufactures. Inter-European commerce. France, Switzerland, Germany, and Austria in such detail as time will allow.

Physical Geography.—Phases of the moon. Tides.

Third Term.—The rest of the countries in such detail as time will allow. Spain. Balkan Peninsula. Italy. Holland. Belgium. Denmark. Scandinavia. Russia.

Third Year's Course: First Term.—Geography of Asia. The great central plateau and mountain walls. Other mountain ranges. Seaward slopes. River basins. Lakes. Comparison and contrast with Europe. Coast of Asia. Islands. The prevalent winds of Asia. Ocean currents affecting Asia. Climatic divisions. Rainfall. Soil and characteristic products. Animals.

Second Term.—Mineral wealth and its distribution in detail. The races of Asia. The commercial productions. Density of population. Religions and industries. Chief roads and railways. Sea routes. Commerce. A more detailed study of the geography of the British possessions in Asia.

Third Term.—The political divisions of Asia. The chief towns. A more detailed account of the geography of Japan, the Chinese Empire, Russian Central Asia, and Afghanistan. European political interests in Asia.

Fourth Year's Course: First Term.—*The Geography of Africa.*—The relief of Africa. Contrast with Eurasia. The lakes and rivers of Africa. The coast. Reasons why the continent remained so long unexplored. Outlines of the history of settlement and exploration.

Physical Geography.—The great oceans of the world, showing briefly their relation with the great water partings. Finding position at sea.

Second Term.—The prevalent winds of Africa and ocean currents. The rainfall. The lakes as reservoirs. The climatic divisions of Africa. Soil and minerals. Products.

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The races of Africa. The geography of Egypt, and the Barbary States in greater detail.

Third Term.—The Sahara. The Soudan. British Africa. German and French possessions in Africa.

First Year Pupil-Teachers: First Term.—*The Geography of America.*—Relief. Lakes. Rivers. Coasts and harbours. Prevalent winds and ocean currents affecting climate of America. Climatic divisions. Rainfall. Soil and minerals. Animals. The political and economic geography of Central and South America.

Physical Geography.—Revision of latitude and longitude. Finding position at sea. Map projection.

Second Term.—The political and economic geography of North America.

Physical Geography.—Winds.

Third Term.—The geography of Australasia, physical, political, and economic.

Physical Geography.—Ocean currents.

Second Year Pupil-Teachers: First Term.—The geography of the British Isles (see first year's course). Revise geography of Asia.

Physical Geography.—Tides. Climate.

Second Term.—The geography of Europe (see second year's course). Revise geography of Africa.

Third Term.—Revision of the geography of the British Empire, including historical geography.

THE STUDY OF SPEECH SOUNDS.

By Prof. Walter Rippmann, M.A.

III.

(*Concluded from p.* 54.)

THERE are many difficulties confronting a child when it begins the study of a foreign language; one of the greatest is the pronunciation. It is not merely that new sounds have to be learnt, differing slightly or entirely from those in the mother tongue; the manner in which sounds are represented is also different. The sound written *sh* in English is written *ch* in French and *sch* in German; the letters *eu* have a different value in each of these three languages. Just as the English spelling is an obstacle to the appreciation of English sounds, so the French and, to a less degree, the German spelling must be regarded as a difficulty in the way of the beginner.

It may be urged that for most pupils a reading knowledge suffices, and that if they should come to need a conversational knowledge they could soon acquire the pronunciation by a stay in the foreign country.

Boys and girls are sent abroad in order that they may learn foreign languages. The result may sometimes be satisfactory; it is safe to say that in most cases they acquire fluency at the expense of accuracy, particularly in matters of pronunciation. They hear the foreign language constantly, yet for lack of suitable training they continue to speak the foreign sounds with an "English accent." It is the learner who has already acquired some knowledge of the foreign speech-sounds and a fair vocabulary that derives most benefit from a stay abroad.

It is a dangerous thing to disregard the pronunciation in the belief that it can be learnt later on. It would be safe, if it were possible for the learner to acquire a reading knowledge without pronouncing the words; but if we do not supply the correct sounds, the pupil will still attach *some* sounds to the words, and these are sure to be almost entirely incorrect. The pupil will utter the foreign language with what we call an "English accent"—that is, he will retain his old habits of speech, perhaps with a few slight modifications. Gradually there arises in his mind a powerful association between the foreign word and its "English" pronunciation; and unfortunate indeed is he whose duty it becomes to destroy this association by the laborious work of training the pupil to pronounce correctly. He has to teach the use of long, pure vowels where the pupil has been uttering diphthongs (as in *rose*, *même*, *Rose*, *Schnee*); he has to substitute a new stress for the faulty old one (as in *commencer*, *répondre*, strongly stressed on the second syllable); he has to teach the pronunciation of *r* (as in *mère*, *partir*, *mir*, *hart*); his task is heartrending.

Perhaps the idea that French might be pronounced with English sounds is not unconnected with the customary pronunciation of Latin. It used to be the rule (and it is still too common) to begin Latin before French, and pupils thus unconsciously acquired the impression that foreign languages had the same pronunciation as English. To one phonetically trained, the ordinary pronunciation of Latin is quite painful; it seems so needlessly ugly and so utterly wrong. Almost every vowel suffers in quality, and often in quantity too, and some of the consonants fare as badly. It is earnestly to be desired that the efforts of the Classical Association to improve matters will meet with success; yet it is to be feared that the day is still distant when our classical colleagues will gladly recognise the value of phonetics. Meanwhile they will continue their enthusiastic praises of melodious verse—which they cannot read aloud!

But to return to modern languages: the view more and more generally held is that the cultivation of the spoken as well as the written language is the best preparation for the study of the literature. It is argued that the beginner should obtain a good command of a fair vocabulary of common words and the essentials of grammar, and that this can best be obtained by a copious use of the foreign language both in its spoken and in its written forms. It is not my object here to uphold the reform method, which has been exposed to a good deal of unintelligent criticism; I am confident that the main contentions of the reformers are based on general principles not likely to be assailed successfully. For my present purpose it is sufficient to state that those who believe in the reform method attach much importance to the spoken language, and that those who oppose it have to confess that in this respect at least it marks an advance on the old "grammatical" method.

If the foreign language is to be spoken at all,

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it seems to be self-evident that it should be spoken as correctly as possible. How is this object to be achieved?

For a long time it was thought that a foreign teacher was alone able to teach the pronunciation of his language; yet it does not require much thought to arrive at the conclusion that the teacher must have a knowledge of the sounds both in the pupil's mother-tongue and in the foreign language. Imitation alone has been proved to be insufficient. Occasionally a pupil taken by himself and possessing unusual ability has been taught by a clever teacher to pronounce the foreign language well by imitating the teacher's speech; but this is rare. Particularly in the case of languages like English and French, where the whole manner of speech is widely different, it is necessary for the teacher to be well acquainted with the pupil's mother-tongue.

Again and again we see excellent foreign teachers of French and German whose pupils pronounce the foreign languages in an obtrusively English way. It is not that the teachers do not pay attention to the pronunciation; especially when they are new to the work, they show great zeal and perseverance in this respect. The attempts of the pupils to imitate their pronunciation do not satisfy them; they feel that something is wrong; but when the faulty pronunciation persists, they come to the conclusion that English children can get no nearer to the correct pronunciation than this, and so they reluctantly content themselves with what seem the best results obtainable. It is quite possible that no better results can be obtained—by imitation.

It is different when the teacher, native or foreign, has taken pains to acquaint himself with the phonetics of both languages. He is prepared for the mistakes which his pupils are likely to make, and he forestalls them by suitable exercises. Anxious to prevent rather than to cure, he compares the English and the foreign sounds, and knows exactly on what he must lay special stress. If his pupils come to him with untrained ears, he proceeds to give them the power to discriminate sounds, which necessitates some acquaintance with the organs of speech; and in this he is encouraged by the interest which his words never fail to arouse. The pupils have been uttering speech-sounds for a long time, yet without knowing how they were uttered; and the new light shed on such familiar processes is like a revelation. It is sometimes suggested that "pupils should not be bored with phonetics." This is the objection of the critic who attacks that of which he has no personal experience. The man capable of boring his pupils with phonetics is the man who bores them whatever he teaches. A keen teacher of languages who has once introduced phonetics into his teaching does not drop it again. If you wish to have an opinion as to the value of phonetics to the teacher of French or German, it is well not to go to one who has never made use of phonetics.

The first condition of success in teaching the pronunciation is the teacher's competence; the second is practice on the part of the pupils. As was pointed out in the first of these articles, they have been speaking English until certain habits of speech were formed. These habits have become firmly rooted by the time when the foreign language is begun. They are now called upon to acquire entirely fresh habits of speech; muscles have to be brought into active play which previously took little or no part in the production of speech sounds. This demands much practice. The time devoted to a foreign language is limited; during the rest of the day the old habits of speech prevail. It seems all the more necessary to give to the foreign language as much of the time allotted to it as is possible. This is one of the reasons why the reformers urge that the mother tongue should be used as little as possible in the foreign-language lesson. They maintain that to utter alternately the foreign language and the mother tongue renders it more difficult to acquire the fresh habits of speech than when the two are kept apart. Their contention seems a sound one.

The teacher who has studied phonetics is naturally anxious to utilise his knowledge in the class-room. He can do so by explaining the formation of the sounds; in all probability he will have recourse to the phonetic alphabet, which he has found so helpful in his own inquiries into the matter of pronunciation. Perhaps he will be content to use the signs when he is explaining the sounds, and for the purpose of drilling the organs of speech; he will find a printed sound-chart very useful. Perhaps he will go further, and let his pupils write in the phonetic transcription.

If he decides to do so, he must make up his mind whether he will teach the phonetic signs exclusively in the early stages, or concurrently with the ordinary spelling. In the case of German, no disadvantage arises from teaching both at the same time; in the case of French, the best results are likely to be obtained with English pupils if they use the phonetic transcript exclusively during the first term. After three months they will have acquired the fresh habits of speech. They can speak correctly, if not very fluently or about many subjects. It will still be necessary to practise the foreign sounds; even the foreigner's pronunciation of his language suffers if he speaks English much, yet in his case the habits of speech are much more firmly established than they can possibly be in the case of our pupils.

When the attention has for a term been devoted to the sounds, there is not much danger of the conventional spelling misleading the pupil; but is it not likely that the habit of representing the foreign sounds phonetically will interfere with the spelling? This seems a valid objection; yet experience shows it to be groundless. Indeed, pupils who have passed in a methodical fashion from the phonetic to the ordinary spelling are found to spell quite as well as those who learn the ordinary spelling only, if not better. After all, this is not surprising. They do not learn

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the spelling in a hap-hazard way, but methodically; they realise the difference between the two systems of representing sounds, and when, for instance, they spell *ombre* and *tante*, they can supply a reason why there should be *m* and *n* in these words respectively—a point which hardly occurs to the pupil who has had no phonetic training. Similarly, the *ç* in *commençant*, the *qu* in *turque*, cease to be exceptions, and gain a fresh interest as illustrating the inadequacy of the ordinary spelling.

To those who wish to pursue the subject further, I would recommend Mr. Dumville's excellent "Elements of French Pronunciation and Diction" (Dent) and Prof. Viëtor's "German Pronunciation" (Reisland) and "Elements of Phonetics: English, French, and German" (Dent), my adaptation of his "Kleine Phonetik." As an introduction to the observation of the mother tongue I venture to call attention to a little volume entitled "Sounds of Spoken English" (Dent), which I have just written with an eye to the requirements of our training colleges.

I do not know whether these articles will have converted a single reader who started with a prejudice against the study of speech sounds, considering it a subject only for the faddist. There are, however, among the readers of The School World a large number of teachers who preserve an open mind and are willing to listen to the experience of others and to give a fair trial to what seems valuable in their suggestions. I am hopeful that my words may induce some students to devote their energies to phonetics. It is a science which owes much to Englishmen, but has for some time been neglected by them. The gain to be derived from the study of speech sounds is not inconsiderable. To establish a standard speech for the British Empire, and to enable every school-child to use that speech fluently beside its local dialect; to remove the great obstacle to intercourse with other nations, which our faulty pronunciation of their languages presents to us—these are objects requiring zeal and devotion for many a long year. Deep-seated prejudices must be overcome before success is attained; but the cause is worth the struggle. The teacher of languages has a great responsibility: introducing the child into the language and the literature of its mother tongue, he is teaching it to think clearly and to feel finely; helping the learner to understand a foreign language, he renders possible the just appreciation of the foreign people, which is a powerful aid towards an enlightened patriotism.

Bacon's Essays. By E. H. Blakeney. xiii.+373 pp. (Blackie.)—This is a handy little book, hardly larger than a pocket edition, supplied with a brief but good and readable introduction and some excellent notes. Editions of "Bacon's Essays" are numerous enough, but this has many merits and deserves attention.

MANUAL INSTRUCTION IN BOYS' SECONDARY SCHOOLS.[1]

By W. A. Knight,
Sexey's Trade School, Bruton.

II.—Woodwork.

THE workshop should be well lighted. By utilising a room at the end of a building, it is often possible to have light on three sides, and at the same time to prevent the noise of hammering, &c., from interfering with other lessons. A cheaper and better plan is to build a separate block, consisting of metal- and wood-workshops placed end to end, a little distance from the main building. The style of architecture can be more modest than that of the school frontage, and several other small economies can be introduced by the architect.

Each room should have a superficial area of about 600 sq. ft.—say 28ft. × 20ft. or 22ft. The requirements by the Board of Education of a

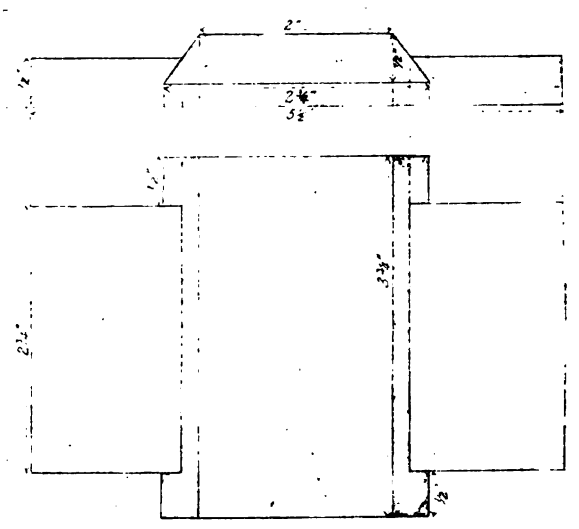

Fig. 1.—Joint No. 25.

minimum of 40 sq. ft. per pupil seems to the writer unnecessarily exacting. Most experienced manual instructors would be satisfied with 30 sq. ft. in the case of woodwork. Roof-lights can be used, but there must also be plenty of light near the bench-level.

Many types of woodwork benches are on the market, but these often lack *rigidity*, which is quite indispensable. A good and economical plan is to get long benches made locally, the tops to be of beech or sycamore, the legs 4in. × 4in., strongly framed together. The maker will often know where to put his hand on suitable wood which may have been lying by for years, and for which he has found no use. A bench about 12ft. × 4ft. will accommodate six pupils, three on either side. Three of such benches can be arranged very conveniently in a shop 28ft. × 18ft.

[1] The first article appeared in December, 1905.

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or 20ft. If each bench accommodates eight pupils, it will be 16ft. long, and the width of the room must then be increased to 20ft., or preferably 22ft. A bench for eight pupils, complete with vices, which has been in constant use for ten years, was made locally, and cost the writer £5. A rough drawer or shelf under the bench at each place serves for storing work in process of completion. Elaborate arrangements for tools are unnecessary. A strip of wood, 5in. by 1in., arranged round the walls, blocked out so as to leave a space of 3¼in., allows the planes to be slipped down behind. Part of the space between the strip and the wall is covered over with wood, in which are slits for tenon-saws, chisels, and other flat tools, and holes for other tools. A set of tools is kept together, the number of the set corresponding with the number of the bench-place. It is thus easy to trace the author of any ill-usage to which the tools have been subjected.

LIST OF TOOLS RECOMMENDED.

	s.	d.
Jack-plane	4	6
Tenon-saw	3	3
Scriber		4
Half-metre rule	1	6
Foot rule	1	0
Square	1	3
Bradawl		3
Half-round file		9
Set of 4 chisels, 1in. to ¼in. ...	2	6
Paring chisels, ¾in. and 1in. ...	1	10
Mallet	1	6
Marking-gauge		10
Total ...	19	6
Twenty sets, say £	20	0 0

In addition, for general use:

	£	s.	d.
6 hammers at 1s. 2d.		7	0
6 gauges at 10d.		5	0
2 try-planes at 6s.		12	0
4 mortise-gauges at 2s. 3d. ...		9	0
6 smoothing-planes at 3s. 6d. ...	1	1	0
2 cutting-gauges at 1s. 3d. ...		2	6
2 spokeshaves at 1s. 6d.		3	0
6 mortise-chisels at 9d.		4	6
2 oil-stones at 2s. 9d.		5	6
2 glue-pots at 2s. 6d.		5	0
2 braces and sets of bits at 24s. 6d.	2	9	0
1 rip and 1 cross-cut saw		6	6
1 grindstone, fitted, say	1	7	0
Total ...	£7	17	0

A supply of brads, nails, screws, glue, sandpaper, &c., will be required.

One or two shelves, with gas, should be arranged in a convenient place, for the glue.

A small blackboard can be placed flat against one wall, resting on a strip, and kept in place by buttons.

A large cupboard is indispensable, at least 6ft. 6in. × 4ft. 6in. × 2ft. 6in., with shelves for storing joints and models, and with two or three large drawers with partitions for storing sundries.

A supply of wood for a year sufficient for two classes of twenty each would be as follows for the course suggested:—

500ft. run bass wood, 1½in. × 1¼in.
50 sq. ft. bass wood, 6in. × ⅞in.
500ft. run teak, 1½in. × 1¼in.
50 sq. ft. teak, 6in. × ⅞in.
300ft. run red deal, 1½in. × 1¼in.
300ft. run red deal, 2in. × 1½in.
500ft. run yellow deal, 1½in. × 1¼in.
500ft. run yellow deal, 2in. × 1½in.

A small quantity of Kauri pine, say 100 sq. ft., ⅝in. and ½in. thick, may be usefully added.

The total cost should not exceed £10 or £11.

A foot-lathe is a useful addition, and can often be purchased locally second-hand. It will serve for the more skilful pupils who are in advance of the others, and can be set to make (among other things) handles for the models in the metal-work course.

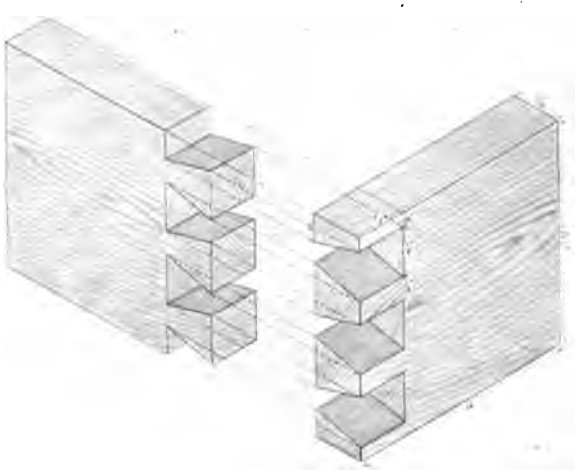

FIG. 2.—Joint No. 24.

The grindstone would be placed with advantage in the metal-workshop.

"Woodwork (English Sloyd)," by S. Barter (Whitaker), is an indispensable handbook for every teacher engaged in manual instruction.

SUGGESTED COURSE IN WOODWORK.

LIST OF EXERCISES, SHOWING ORDER OF JOINTS AND MODELS.

1. Use of English and French rules.
2. Planing first face (up to 1in. wide).
3. Planing second face and squaring.
4. Measuring, lining, scribing, and gauging.
5. Planing to sizes (up to 10in. × ½in. × ½in.).
6. Use of knife.

Model 1.—Flower-pot Stick.

7. Sawing across and with grain and at an angle with tenon-saw.
8. Planing to sizes 10in. × 2in. × 1in.
9. Use of paring chisel.

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Joints 1 *to* 10.

10. Glue, use of.
11. Filing and glass-papering.

Model 2.—Vase Stand.

12. Boring with awl, nailing, and punching.
13. Use of smoothing-plane and shooting-board.

Joints 11 *to* 15 (to be glued and finished).

Model 3.—Flower-pot Stand.

14. Octagonal and curved planing.

Model 4.—Round Ruler.

15. Wide face planing.
16. Shooting end of grain.

Model 5.—Box (about 9in. × 5in. × 3in.).

17. Plugging and bevel planing.
18. Boring.

Model 6.—Flat Ruler (one bevel).

19. Counter sinking and screwing.

Model 7.—T-square.

20. Gouging.

Model 8.—Pen Tray.

21. Mortise gauging.
22. Use of mortise-chisel.

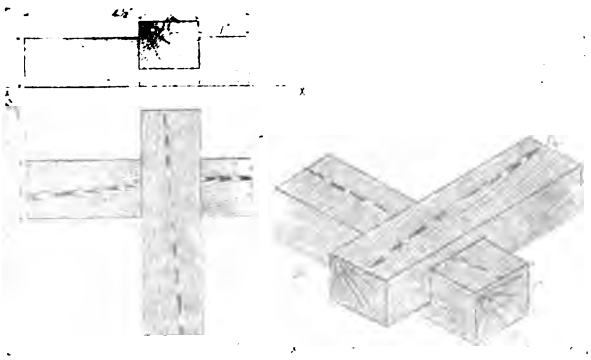

Fig. 3.—Joint No. 4.

Joints 16 *to* 22.

Model 9.—Footstool.

Model 10.—Try-square.

Joints 23 *to* 24.

Model 11.—Soap Box.

23. Oblique sawing and routing.

Joint 25.

Model 12.—Bracket.

24. Dowelling.

Model 13.—Test-tube Stand.

Joints 26 *to* 30.

25. Rebating, chamfering, and stop-chamfering.

Model 14.—Picture Frame.

26. Glue-jointing.
27. Pad-sawing.

Model 15.—Footstool.

Model 16.—Box and Lid (dovetailed).

Supplementary Models:—

Inlay; pen-tray; axe-shaft; lamp-stand; gauge; mitre-square; mallet; bootjack; letters formed of combined joints.

List of Joints.

1. Half-lap, open.
2. ,, middle.
3. ,, closed.
4. Notching.
5. Half-lap, dovetail.
6. Oblique half-lap, open.
7. ,, ,, middle.
8. ,, ,, with notch.
9. ,, ,, closed.
10. Cogging.
11. Tongue and grooving.
12. Housing and rebating.
13. Simple scarfing.
14. Bridle.
15. Stop bridle.
16. Mortise and tenon, open.
17. ,, ,, closed.
18. ,, ,, with haunch.
19. ,, ,, closed, with haunch.
20. ,, ,, with wedges.
21. Double mortise and tenon, open.
22. ,, ,, ,, closed.
23. Single edge dovetail.
24. Triple ,, ,,
25. Key grooving.
26. Lap dovetail.
27. Mitre dovetail.
28. Mortise mitre joint.
29. Scarfing joint.
30. Angle bridle.

N.B.—The illustrations accompanying this article are inserted merely as specimens of drawing actually done in class.

BOOKKEEPING AS A SCHOOL SUBJECT.

By John Thornton.

II.

(*Concluded from p.* 49.)

In the article already published the claims of bookkeeping as a school subject were considered, and it was urged, not only on the ground of its usefulness in after-life, but also on that of its educational value, that it would be well if the subject were taught in all schools. The important question remains: *How should it be taught?* For there is no doubt that it would be better to leave it alone altogether than to go the wrong way to work to teach it.

This question cannot be properly answered unless we clearly understand the distinction between office and school bookkeeping. The school is the place to learn the theory; the office is the place to learn the practice. To attempt to teach office bookkeeping at school is a fundamental error.

The school bookkeeping of a generation ago was vitiated by this error. A pattern "system" was cunningly devised, to be faithfully copied by the pupil and "neatly ruled off in red ink." The nearer the approach made to the average clerk's work in the average office, the better the system was supposed to be. To the theory and principles

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of the subject, as exhibited in the final statement of results, little or no attention was paid. The average clerk would have nothing to do with these final results for the first ten or twenty years of his career, at all events, so why should the poor schoolboy's head be troubled about them? In the old school text-books the explanation of the balance-sheet and of the method of proving often occupied less than a couple of pages of small print, apparently having the remotest possible connection with the body of the work, which consisted of page after page of model day-book, journal, and ledger. Such brief and lifeless explanations seemed to have been placed there more for form's sake than anything else—very much as the Dedication to King James is placed at the beginning of our Bibles. True, they were occasionally glanced at by a yawning schoolboy, as a weary worshipper might try to relieve the tedium of a dull sermon by reading the address to the Most High and Mighty Prince James, but in neither case with the smallest idea of marking, learning, and profiting by what he was reading.

It may be thought that this is all changed, and that no such old books are used now. I am sorry to say this is only partially true. The fallacy still seems to linger in the minds of some writers of text-books that the only object of teaching bookkeeping is to train up a race of model clerks, and consequently the concession to modern ideas too often takes the form of what is supposed to be a judicious blend of theory and practice.

But the truth is, that while school is far and away the best place for teaching the theory, the office is the only possible place for effectively teaching the practice. For there are, in fact, thousands of systems, each one of which has grown up with or been modified and adapted to the special circumstances of the particular business concerned; and it is folly to attempt to instruct the schoolboy in any one of these systems, when the chances are 999 to 1 that in actual life he will have to use something quite different.

No, it is no use making experiments with a cunning mixture of office and school bookkeeping. The distinction between the two is radical, and nothing but disappointment can result from the attempt to amalgamate them. The only true way to teach bookkeeping at school is *to depart as widely as possible from office methods.*

For instance:—

(1) Office bookkeeping ends with the ledger. School bookkeeping begins with the ledger.

(2) Office bookkeeping treats of personal accounts first. School bookkeeping treats of nominal accounts first.

(3) Office bookkeeping works onwards towards capital account. School bookkeeping works backwards from capital account.

(4) Office bookkeeping makes use of technical terms and abbreviations as much as possible. School bookkeeping avoids them as much as possible.

(5) Office bookkeeping records long series of transactions lasting half a year or more. School bookkeeping is broken up into short series of transactions recorded and proved in half an hour or less.

(6) In office bookkeeping the final results are kept out of sight of the ordinary bookkeeper. In school bookkeeping the attention of the pupil is steadfastly and continuously directed thereto.

(7) The office bookkeeper can seldom stop to ask the reason for this or that, and there is no one but a crabbed old senior to answer him if he does. The schoolboy, on the other hand, is expected to understand the reason for everything, and to ask if he does not.

These distinctions are not accidental and trivial; they are essential and vital, for these reasons:—

(1) School bookkeeping begins with the ledger because the other books have nothing to do with the main principle. Indeed, so far as the theory of bookkeeping is concerned, they can be dispensed with altogether. This would be almost impossible in practice; but it is not only possible, it is highly advantageous in school, because it concentrates the mind of the learner on the thing that it is most needful for him to learn. To begin with the subsidiary books is unwise in all cases, as it gives an exaggerated idea of the importance of these books. And when the pupil's school studies are abruptly cut short before he has touched the heart of the subject, such initiatory work proves quite worthless. The principles of bookkeeping are not only not understood; they have not even been considered, and the mind has been clogged with special methods which will only by the merest chance coincide with those needed in after-life. The difference between the theory and practice of bookkeeping is like the difference between an actual game of chess and the explanation of the game to a beginner. You begin your game with a pawn; you begin your explanation with the king. Whatever books may be used, in any system of bookkeeping the ledger is the king of them all, and to begin to teach bookkeeping with the subordinate books because they are the first used in actual business is as stupid as it would be to begin to teach chess by showing your pupil the opening moves of an actual game and getting him to imitate them.

(2) School bookkeeping treats of nominal accounts first because these are the accounts that show the gains and losses arising out of the various business transactions for a definite period, and the effects such gains and losses have upon the capital invested in the business. Business is carried on for the sake of profit, and it will soon come to a standstill if the net result is not profit but loss. Nominal accounts are the pulse of the business—or, rather, the nurse's chart showing pulse fluctuations—and some knowledge of these accounts is an essential preliminary to a clear understanding of the other accounts.

(3) Office bookkeeping goes forwards. School bookkeeping goes backwards—that is to say, having first of all explained the balance-sheet, and shown how this statement of final results is the goal of the bookkeeper's labours, we then

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proceed from this ascertained spot to the regions that lie nearest to it, and so work our way backwards (in explanation) from the known to the unknown, just as in the teaching of geography a plan of the school premises is frequently, and very wisely, taken as a starting-point.

(4) Office bookkeeping is full of technical terms and abbreviations; it positively revels in their obscurity and multiplicity. School bookkeeping never uses them if they can possibly be avoided, knowing that they both mystify and repel the learner, and also lead him astray from the matter in hand. And this is not at all to be wondered at. One or two long words even in a child's story-book are by no means resented, and may even impart a pleasant flavour to the dish (as Charles Kingsley and Lewis Carroll very well knew); but to see a page peppered all over with unfamiliar words and phrases is enough to daunt the stoutest heart, and unless the call of duty is clear or the prize very alluring we ordinary mortals shirk the conflict. Boys are human after all.

(5) Office bookkeeping records the transactions of one long period in one long series. This is inevitable. It would never do to balance and prove the books every week in order to discover how things were going on. It would be like the action of a child raking up the mould to see how the seeds in his garden were getting on. Nevertheless, it is a most important and interesting thing (both in gardening and bookkeeping) to know how things are getting on—and in school bookkeeping we disturb the soil as often as we please, to show the process and master the secret. Accordingly, we give very short exercises, so that we may see the six or twelve months' work of the office in focus. The long school exercises of the last generation were the bane of school bookkeeping and the main cause of the just disrepute into which it fell. There could be no sustained interest in such exercises; besides which, in not a few cases, the pupil left school long before he reached the goal of his labours, probably even before he came near enough to discern the goal through the mist and fog.

In modern school bookkeeping, on the other hand, the goal is close at hand; the player cannot but see it, and with quickened and sustained zeal he presses towards it.

(6) This goal—the culmination and fruit of all his toil—is hidden from the profane gaze of the ordinary office clerk. The books he has been laboriously keeping are on the appointed day conveyed reverently into the partner's private room. The doors are locked. The private ledgers are taken out of the private safe and, the results having been privately arrived at and entered, the books containing these results are carefully locked up again without the bookkeeper being invited to assist in this interesting operation. Consider the contrast in school bookkeeping. Here. the pupil's attention having been steadfastly directed to the balance-sheet and capital account from the very start and fixed thereon throughout, he reaps at last the satisfaction of seeing their absolute agreement through his own painstaking care, and is rewarded by this clear proof of the accuracy of his own work.

(7) The last point of contrast between office and school bookkeeping is the most definite and significant of all. The office clerk has to pursue his course steadfastly without stopping to make inquiries. It is no part of the duty of his seniors to explain to him the principles of bookkeeping generally, or even the principles of the special system adopted in his own office. Provided he understands that part of the special system which affects his own department, this is all that is required or expected of him. If he should be ambitious, he must help himself to a wider knowledge of the subject as quietly and unostentatiously as he can. For it is by no means unlikely that if he were suspected of busying his mind with speculations as to the meaning or wisdom or perfection of the system adopted in his office he would receive a peremptory hint to give a more undivided attention to his own duties. Conditions the very reverse of these are the rule and custom of school life. Here the master proffers his advice and help, and eagerly welcomes intelligent inquiry and thoughtful criticism.

We have thus seen that office and school bookkeeping are totally distinct things, and that to attempt to combine the two would be like trying to mix oil and water. They will not mix even with the most prolonged and energetic shaking. School is the best possible place for teaching the principles and the worst possible place for teaching the practice of the subject.

Let us suppose now that we have succeeded in converting our sceptical schoolmaster. He will perhaps ask us how best to introduce the subject into a school where it has never been taught, or what measures to take to revolutionise its present teaching where that is seen to be unsound; to whom we reply that he must at any rate see to these things—a good text-book, a good teacher, sufficient time, and a little honest encouragement.

Good text-books are the first essential. These can be obtained with much less difficulty than formerly. But do not take the first that presents itself, and do not trust simply to recommendation. Obtain copies and examine them to see whether they meet the conditions already discussed. See that they deal with principles mainly, that at first glance they attract rather than repel, and that they are written in fair and intelligible English.

Then secure a good teacher—one of the permanent staff if possible, but in any case one who is a good teacher—one who understands boys as well as he understands bookkeeping, and is equally enthusiastic about both. Bear in mind that a knowledge of accountancy without a knowledge of boys is of no use whatever. On the other hand, let no one attempt to teach the subject who takes it up with scorn or aversion or as a mere matter of duty.

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These are the two chief essentials—a good captain and a good ship. Yet your vessel will make little headway if you keep it in the shallows and narrow creeks. Give it sea-room. Do not imagine that one lesson (of forty minutes) a week without preparation is sufficient. The least time that will give good results, in my opinion, is two lessons a week, with suitable time for preparation or exercises, though one lesson a week will suffice for diligent and earnest pupils if backed up by adequate out-of-school work.

In the last place, give the subject honest encouragement. Do not forget it or slur it over. Do not omit to notice it on speech-day or prize-day. Do not speak of it with a covert smile, or allow it to be sneered at or treated as an idle amusement good enough to fill up the time of those poor fellows who have no brains for anything better. Let it take an honourable position side by side with other subjects, and you will certainly reap a due reward, if not in examination—which is a secondary matter—at any rate in the knowledge that you have helped to give your boys a better equipment for life's difficulties and life's duties.

THE TRAINING OF TEACHERS IN SCOTLAND.

PROPOSED RADICAL CHANGES.

THE Scotch Education Department has just issued for information and discussion a draft minute containing "Regulations for the preliminary education, training, and certification of teachers for various grades of school." This minute has for some time been under the consideration of the provincial committees for the training of teachers, and it was the intention of the Department to submit these regulations to Parliament after consideration of the amendments suggested by these bodies. As, however, incomplete or misleading versions of the new regulations had found their way into the press, it was considered advisable to issue the whole minute for public discussion and criticism. It may be said at once that, whatever the defects of the minute in matters of detail, a difficult problem has been tackled in a courageous spirit and with a comprehensive conception. Boldness of initiative and breadth of view characterise all the proposals, and their adoption will certainly lead to the creation of a teaching profession that in scholarship and professional equipment will rank with the best.

The regulations are necessarily somewhat intricate, and appeal chiefly to the educational expert, but an admirable conspectus of their scope and aim is furnished for the general reader in an accompanying prefatory memorandum. From this it is seen that the whole course of training is regarded as one continuous process having two aspects—namely, the general education of the future teacher, and his professional training. Concentration is made upon the first in the earlier part of the course, and upon the second aspect in the latter, but in each stage the claims of these two sides of training are kept in view. It will be generally accepted that a liberal education is one of the chief qualifications for a teacher. Without this, no training and no natural aptitude can produce wholly satisfactory results. The acceptance of this principle necessarily involves the disappearance of the pupil-teacher system in its present form, and the Education Department deserves every credit for boldly accepting its logical consequences and abolishing juvenile labour from the schools. The Department might have sought refuge in the half-way house of the Board of Education with a two years' apprenticeship, but in acting as it has done it has chosen the better part. The pupil-teacher system at best was a mere makeshift, and was tolerated so long only because it was cheap. The attempt to combine academic training with professional training in the Falstaffian proportion of "a halfpennyworth of bread to an intolerable deal of sack" broke down years ago, at least in populous centres, where the pupil-teacher has become a half-timer—one half-day a learner, the other a teacher.

The standard of general education has risen so much in recent years that even this compromise has failed. The burden of the two trainings, academic and professional, has placed an intolerable strain upon pupil-teachers. They live in an atmosphere of perpetual rush and pressure, where true education cannot breathe. Education, if it is to be worthy of the name, demands a certain measure of leisurely progress. Pupils must have time to think, to assimilate knowledge properly, and not bolt it in undigested chunks as too many have to do now. That the results have generally been so good is a notable testimony to the ability of the teachers and to the capacity of the pupil-teachers; but in most cases success has been bought with a price. On the professional side, which is the supposed strong point of the system, the objections are even more pronounced. Youths begin to teach when they are just emerging from the primary stage of knowledge. They are given authority before the sense of responsibility has been awakened within them, and the result is too often hurtful to their own temper and character, as well as disastrous for the poor pupils who are the *corpus vile* for their callow experiments.

But if the pupil-teacher system as known to us is abolished, some of its most valuable features are to be retained. The pupil-teacher system certainly was an ideal method for eliminating the unfit at an age when they could profitably and without serious loss of time turn to other employments. Certain constitutional qualities and natural aptitudes are absolutely essential to the teacher. No study and no training can confer these if wholly lacking, though they can certainly be greatly improved by both. In the new regula-

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tions, provision is made at each stage for the systematic observation of those personal qualities which make for or against particular fitness for the office of teacher, and at the later stages the test of actual contact with the problems of class-teaching has to be passed.

The minute further provides for the professional training of teachers in all grades of schools. For over sixty years this principle has been operative in the case of elementary-school teachers, and has completely justified itself by its results. Yet it is strange that no provision has ever been made or required for the teachers in secondary schools. The mere possession of knowledge was in their case supposed to confer the power to impart it, and training was regarded with a good deal of suspicion, if not contempt. This position has long been abandoned by most secondary-school teachers, but no organised system was available for their training. All this is remedied by the new minute, and the most ample provision is made for the professional training of the secondary-school teacher.

The reforms outlined above are too far-reaching and radical to escape destructive criticism, and already all the gargoyles of public opinion are beginning to spout. School boards are up in arms because the new regulations will add considerably to the cost of education by the substitution of trained teachers for pupil-teachers. A good deal of sympathy will be felt with this view, but, after all, this is only part of a great question which has recently been raised in regard to the readjustment of the relations between local and Imperial contributions. Such readjustment is absolutely essential in certain districts, or the whole educational fabric will come tumbling down; but if a satisfactory solution is to be reached, it can only be by taking up the whole question, and not by tinkering at a small fringe of it here and there.

A more serious, because more specious, objection is heard in many quarters. It is contended that the terms of the new minute will exclude the children of the working classes from the teaching profession. The avenues of promotion for those of limited means are not so numerous that one could look with indifference on the closing of a single one. Much of the best talent in this as in every other profession has been drawn from this class in the past, and it would be the height of folly to close the door on such in the future. No such objection, however, can fairly be taken against the regulations. By means of bursaries and maintenance allowance the most ample provision is made at each stage for this class of pupil. The regulations certainly contemplate the possibility of a certain number of students providing for their own maintenance. It is to be hoped an ever-increasing number will do so, for only in this way will the teaching profession take its proper place among the other professions.

The following summary gives the outstanding features of the new scheme:—

Stages in Course.

The recognised stages in the course of preparation for the office of teacher are as follows:—

(1) Candidates on probation.
(2) Junior students.
(3) Students in full training.

Candidates on Probation.

(Twelve to Fifteen Years of Age.)

(1) Candidates on probation will be chosen from among pupils who have passed the qualifying examination. (This examination corresponds generally to that of the old Standard VI.)

(2) The selection of candidates will be made on the headmaster's written report as to the character, abilities, and promise of each applicant.

(3) The course will generally extend over three years, and must be passed in a higher-grade or higher-class school, or in an elementary school recognised as providing suitable facilities for higher education.

(4) Candidates will be under observation during their course in order to determine whether they do or do not possess the qualities necessary to a successful teacher. For this purpose, practice in teaching may be given occasionally during the last three months of the course.

(5) Candidates on probation shall be eligible for grants on the same terms as the other pupils in the school. In addition, a grant of £—[1] will be paid for each candidate who goes forward to the next stage of training.

(6) Probationary candidates may receive allowances for travelling expenses or for maintenance away from home. Candidates are not under any obligation to go forward to the next stage of training, even though they have obtained maintenance allowances.

Junior Students.

(Fifteen to Seventeen or Eighteen Years of Age.)

(1) Junior students must have completed a three years' course in an approved secondary school, and have obtained the intermediate certificate at the end of their term. (The standard of the intermediate certificate may be said to correspond generally with that of the medical preliminary.)

(2) Junior students will receive their instruction at secondary schools specially approved by the Department for this purpose on the recommendation of secondary education committees.

(3) The course shall extend over two or three years, and the curriculum must include:—English, one foreign language at least, mathematics, science, drawing, manual and physical exercises, music.

(4) Systematic records will be kept of the work of junior students in each subject, and these records will form the basis of the award of appropriate certificates at the end of the course. These certificates will be known as junior certificates, and will have endorsed on them any successes obtained at the leaving certificate examination.

(5) A scheme for the systematic training of the junior student in the art of teaching each of the primary-school subjects must be drawn up for the Department's approval. An instructor specially charged with the supervision of this work will keep a record of each student's progress and efficiency in teaching.

(6) Junior students will not be eligible for the usual

[1] The grants are not yet finally determined.

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school grants, but special grants for them at the rate of £— per student will be paid out of Imperial sources.

(7) Maintenance allowances may be granted to junior students by the secondary education committees. These committees are to have the supervision of young teachers during the probationary and junior studentship stage. Thereafter the supervision passes to the provincial committees.

STUDENTS IN FULL TRAINING.

(1) The course for students in full training must be of not less than two years' duration. It shall be open to all possessing (*a*) a junior certificate, (*b*) a leaving certificate *plus* six months' practical training in an approved school, (*c*) a degree in arts or science of any university in the United Kingdom.

(2) The course shall be according to a curriculum approved by the Department, but every course must primarily make satisfactory provision for the professional training of elementary-school teachers. For this purpose, managers may arrange with neighbouring school boards for the use of their schools as practising schools.

(3) Similar arrangements must be made with the managers of secondary schools for those students who desire to obtain recognition as teachers of higher subjects.

(4) The instruction and training of those students who have passed the university preliminary examination, or its equivalent, may be arranged on the basis of a well-defined three years' curriculum, of which the university classes to be taken shall constitute an integral part.

(5) Students who have satisfactorily completed an approved course will receive a general certificate from the provincial committee. Such individuals will be regarded as being on *probation* for not less than two complete years. At the end of that time they will be reported on by H.M. inspector, and, if approved, will receive their permanent (" parchment ") certificate.

(6) Persons who desire to obtain recognition as secondary-school teachers must put in one year's probation in teaching the subject in which recognition is claimed. Thereafter, on a satisfactory report, a certificate will be issued, but it is subject to withdrawal on the receipt of not less than two unsatisfactory reports.

(7) Maintenance allowances, as in the earlier stages, but on a more liberal scale, may be granted to students in full training. Capitation grants for all students in training will be paid to the provincial committees on a scale somewhat similar to that at present given to training-colleges.

TEACHERS OF SPECIAL SUBJECTS.

Certificates of qualification as teachers of special subjects, such as drawing, singing, cookery, manual work, &c., will be granted by the Department to the holders of diplomas from recognised institutions, provided the holder of the diploma has in each case reached a certain standard of general education (say that of the intermediate certificate or its equivalent) before entering upon the diploma course.

French Unseens. Junior, Book II., and Senior, Book II. Edited by the Rev. S. E. Longland. 42 and 64 pp. (Rivingtons.) 6*d.* and 8*d.*—A convenient selection of short passages averaging some twenty lines in length. Most of the extracts are in prose, but a few poems are added, those in the Junior volume being almost too familiar for the purpose. The book is well printed; we have found only a few slips: Senior, No. 41, l. 3, *sculptée*; No. 45, l. 2, *aine* (?), and l. 21, *verifiait*; No. 52, l. 8, *lâ*; No. 53, l. 9, *toute* for *tout*; and Junior, No. 41, l. 6, *fougeuse*.

ALMOND OF LORETTO.[1]

IN his lifetime, Almond of Loretto received the compliment of both love and hate in no grudging measure. So much is to his credit; it is generally true that those whom all men speak well of are rather the mediocrities than the men who count. As we read this memoir, written by an old pupil and one who admired his master as a hero, we feel the same perplexity as the world felt. There is much to charm, something also to repel; there are marks of genius, and marks of faddishness; even tyranny and injustice. No merit can blind us to the fact that Almond was a tyrant to his assistants (we use the word in its ancient sense). He was often intolerant, and he must have been a great trial to live with, except for whole-hearted hero-worshippers. In a letter to the *Journal of Education*, which met with a crushing reply from Mr. T. E. Page, he laid down the doctrine that a master might be dismissed on suspicion as the lesser of two evils. He also treated his head boys as of more importance than his masters—a grave mistake. But we do not wish to dwell on this side of Almond's character. When he got his congenial staff he was able to inspire them with his own enthusiasm, and he did a good work in his generation.

As a professional man, however, he suffered from a limitation which is too serious to be ignored—he had little sympathy with the intellectual side of his calling. Books he apparently despised; not only bookishness and pedantry, where he would be in good company, but even books at their best he seems to have thought of small importance as compared with matters of dress and diet. His reaction against pedantry in dress, and his crusade against luxury and softness, have our heartiest sympathy; both are still needed, the latter more and more every year. But, as was natural in a reformer, he carried his crusade too far. In his views of intellectual training he went even beyond the average English schoolmaster, and that is saying a good deal. We speak not so much of explicit statements as of the whole tone of his life and work. Yet he had himself much shrewdness and even wit, with some enjoyment of fine literature. An Almondian crusade against false intellectual methods is now wanted as much as ever was his crusade against self-indulgence. He was strong on the moral side of school life, and undoubtedly did produce a manly and self-reliant type of boy; unfortunately this type, when unrefined by intellectual culture, tends towards the brutal.

The compilation of this book shows the faults of his own method. It is undistinguished in manner and lacks a coherent arrangement. There is a good deal of repetition in the letters; a selection of the best would have made a delightful chapter, or, better still, they might have been incorporated in the work as Nelson's are in

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[1] "Almond of Loretto: being the Life and a Selection from the Letters of Hely Hutchinson Almond." By R. J. Mackenzie x. + 408 pp. (Constable.) 12s. 6d. net.

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Mahan's "Life of Nelson." For Almond could write a good letter: vivid and racy, as all his writings were, they have the directness of an intimate talk, and some, such as those written to his son, show a tactful reticence which one would hardly have expected. He is full of pithy sayings (some of which are also slangy), and we feel in every page that we are face to face with a personality. This book will increase Almond's reputation with the public which knew him only by name, and it has an interest for all who care about wholesome life, not only for Lorettonians.

THE CAMBRIDGE ENGLISH CLASSICS.[1]

A HEARTY welcome should be given to these volumes, printed in clear type on good paper, neatly bound, and sold at a moderate price. The series will do something to remove the reproach against Cambridge that it has lagged so far behind Oxford in attention to English literature. True, it will take long to catch up the Clarendon Press, with its admirable popular series of poets and its scholarly editions of Chaucer and Langland, its Berkeley, Dryden, and Lyly; but it will be no small glory to have produced a standard edition of Beaumont and Fletcher. For a standard edition this will be. The text is that of the second folio, exactly reprinted in every respect, except that obvious printer's errors are corrected, whilst in an appendix all variants are recorded which occur in any of the earlier editions. Thus, if we may assume the editor's faithfulness (and his name is a guarantee that care and trouble have not been spared), all the materials are given for criticising the text. We think a mistake has been made in not printing these variants at the foot of the page, which long experience has proved to be the most convenient arrangement for the student; we should also prefer, although here opinions may differ, to have had an eclectic text made after the custom of the editors of classical authors, or, at least, that the second folio should not have been followed where one of the earlier texts is demonstrably better as a whole. But the editor has chosen his principles deliberately, and there is much to be said for them. At least, we are grateful that he has not been eclectic in recording the various readings, but has given us the whole. Our readers will be aware that Mr. Glover died before he could publish his work, but we gather that it is practically ready for press, and the final supervision is in the competent hands of Mr. A. R. Waller. Crabbe's poems are reprinted in chronological order of publication. Errata have been corrected, the actual reading being given in the appendix, which also includes variants from the earlier editions. This volume includes a poem entitled "Midnight," for the first time published from a MS. in the possession of Prof. Dowden, and other unpublished poems will be given in the succeeding volumes.

Beaumont and Fletcher deserve to be read, not only for their own sakes, but for their great importance in the history of the English stage. If we had no Shakespeare, these would have been amongst our precious jewels; but, like most of the earlier dramatists, they are to most Englishmen no more than names. Yet their dramatic power was great. All through the seventeenth century they held their own on the stage; not even the wit of the Restoration could drive them out. These are real acting plays, written by craftsmen who knew their business; the characters are often real flesh and blood, the dialogue brisk and natural, and there are scenes and passages of great beauty in them. The verse suffers sometimes from the number of hypermetric endings, but as a rule it is pleasing to speak and to hear, and not seldom it shows the magic touch of the poet. This volume contains the "Maid's Tragedy," "Philaster," "King and No King," "The Scornful Lady," and "The Custom of the Country."

Crabbe's merits as a story-teller have been eclipsed by the prosy character of his verse and his subject, but he won the admiration of Ruskin (no mean judge), and he has the virtues of manliness and directness. Moreover, as pictures of manners his pieces are of high value. The historical student must read Crabbe, the man of culture should not neglect him; his pictures of life are both interesting and amusing, and it soon becomes easy to forgive him his faults. Some of his verse-tales make useful reading in schools.

[1] "Beaumont and Fletcher." Vol. i. Edited by Arnold Glover. lxii. +456 pp.
"Poems by George Crabbe." Vol. i. Edited by A. W. Ward. xiv.+542 pp.
Cambridge English Classics. (University Press.) 4s. 6d. net each.

THE EDUCATED MAN.[1]

If I am asked to define an educated man, I should say that I mean by that term, a man whose intellect is trained to co-operate in the purpose of human progress; and I fancy that, if you come to think about it, you will see that not much else than this, and not much less than this, is what you mean by an educated man. It is only to put the same thing in other words, to say that an educated man is one who consciously and deliberately holds an intellectual ideal of what he himself and other men are capable of becoming, and who has in some measure the knowledge and the skill to put this ideal into practice. Thus you see, according to my definition, a man may know how to read and write and do sums, and still not be educated. He may read the sporting news, and even write to the newspapers, but if he takes life as he finds it, if he is content to live from hand to mouth in his business and his pleasure, if he is without an intellectual ideal consciously held and deliberately striven after for himself and for his kind, I do not call him educated. Education means the holding and the striving after an intellectual ideal. Or, in the higher region, a man may be a specialist, with an acutely trained and perfected faculty, but if he has not a general ideal enabling him to give his special subject its place in human progress and human life as a

[1] From an address delivered to the members of the Birmingham and Midland Institute by the Right Rev. Charles Gore, D.D., D.C.L., Lord Bishop of Birmingham, President of the Institute.

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whole, he remains a trained specialist rather than an educated man. Or, once more, a man may have ideas, but he may be so far from any right knowledge of what human history is, or what the world is, that he has no power to correlate his ideas with reality, and his ideas remain chimæras. An educated man, I repeat, is a man whose faculties are trained to co-operate in the law of progress.

What departments of knowledge or thought are necessary to make what in any real sense can be called an educated man? First of all, an educated man must know something of history. An Englishman must have some real idea of how this country of ours came to be what it is, of the races which compose our British people, of the various invasions from without which have infused strength into it, of the influences and the struggles which have given us, first, unity, then liberty, then wealth, then empire. But also we must have some standards of comparison. It is not enough that I should know, in some outlines of reality, the history of my own country. I must know, in a measure, how other races have in the past attained a foremost position in the world, and then for more or less assignable causes have lost it. An educated man is a man whose faculties are trained to co-operate in the law of progress. He must know, then, how in fact a man, or Englishman, has advanced to become what he is. But he must know also how men of other races have advanced in the past to positions of pre-eminence and of power like ourselves; and how in the past positions like that, once won, have been lost, and by what causes. You perceive my meaning? Progress is a precarious thing, a thing that depends on co-operation with certain laws physical and moral. The educated man is one who can co-operate in such a law of progress because he has some more or less accurate ideas as to the way in which men in the past have become great and have declined. Or, once again, he must have certain ideas, more or less distinct, of the different kinds of civilisation which, in the past, have come into being among men—of the chief civilisations, at any rate. He should look back and know that there once lived a Greek race which brought into being a city life of wonderful intensity and brilliant intellectual distinction, and how, when the Greek cities sank under the domination of other men, that intellectual race survived and spread abroad, and by their language and the diffusion of their character and thought influenced the whole world. And how another city, on the neighbouring peninsula, the city of Rome, from a city grew to be an empire, and gave the world ideals of government and of law. And a man should know something of the civilisations which in much more recent times reached their climax and decayed—he should know something of the splendid tragedy of Spanish civilisation. And he should know something of what is happening in contemporary times in other countries, of what is the quite recent history of Germany or France. An educated man need not be a scholar. To get real and true ideas of human history of the kind that I have described, a man need but read quite a few books if he reads the right ones. And, what is more important, having read a book, he turns it over and over in his mind, revolves it, and dwells upon it, until he has got certain principles, like hooks, in his mind, on which he can hang the variety of facts which from time to time come under his notice; and hold them together as illustrations which gain distinction and clearness in his mind, and guide his thoughts; so that he feels he knows something of the way in which men become great, and something of the way in which, having won their greatness, they can lose it.

Then, also, an educated man must know something of modern scientific method and achievement. I shall speak quite briefly about this department of education, for fear of making too apparent my own deficiency. An educated man need not be a specialist, or even an adept, in any single branch of science; but a man cannot be—in any tolerable sense—educated unless he has got in his imagination and knowledge a more or less clear sense of what scientific inquiry has accomplished and is accomplishing. More than that, he must know with more or less definiteness what the method of science is; and that—I believe I am speaking the truth—he can only get by a systematic study of some one science, or, more imperfectly, but with some reality, from a careful study of some one or two really great scientific writers such as he can understand. The result of this kind of study to a man, who may be far short of anything that can be called a scientific man or an adept in science, is that the world, in his imagination, becomes the scene of great and constant forces which admit of being reverently explored, and so guided and directed, that they may be made to minister, to an almost indefinite extent, to human progress. You know, of course, Lord Verulam's great maxim—that sort of prophetic word by which he interprets so much that is greatest in modern scientific investigation—that "Nature can be controlled by being obeyed." That means that Nature is a scene of great and constant laws which will laugh at you if you seek to violate or ignore them, but which in proportion to the reverent study you give them can be guided or controlled to infinite possibilities of human convenience, advantage, and progress. Well, thus the imagination of the educated man is enriched and enlightened; and the effect of this kind of conception, if it once gets hold of a man—not only of his mind, but of his imagination—is enormous. It lifts a man altogether out of that practical acquiescence in things as they are which is so enervating. It fires his whole being, possesses his whole outlook, with the idea of knowledge yet to be won, power yet to be acquired, transformations yet to be made.

There is one other region of feeling, and that the vastest, on which I will say a word also. I think a man may be educated in history and educated in science and still lack something, vague but of extraordinary importance, without which a man can hardly claim to be called a really educated man. I think an educated man, by means of art, or music, or poetry, or by whatever means, must nourish in his soul a sense of the Eternal—a sense of that "which was, and is, and evermore shall be," lying beyond all the changes in human history and natural progress—"the Eternal not ourselves," in which we live and move and are, which is both beauty and power, righteousness and goodness. This transcendental emotion is not any definite creed; it is possible to the adherents of almost any conceivable creed: it is common to Herbert Spencer and Hegel, to Plato and Saint Paul: but without it a man is without something so essential to human worth that he can hardly be called educated. You know what it is, when you are worried, and occupied with the infinite details of life, and have the opportunity of listening to some great music, how slowly, if you can be quiet enough to surrender your spirit and lend a listening ear to the music, there steals upon your soul a sense of the eternal harmony—something greater than the discords and the details of the life in the midst of which we live. Or it may be that some single line of poetry, with its unspeakable truth, recalls you to the depths which lie in Nature. Or it may be by some work of art, only a little colour

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and just the outline of some figures—a mother and a child—that, if you have got the quiet eye to look at it, there is smitten into your soul a sense of the eternal and fathomless beauty which there is in common things. Many are the channels by which to different minds sound and shape and colour and motion impart and deepen the sense of the Eternal.

I have selected three elements in education: those that appear to me most essential to make up the character and mind of an educated man—those without which—without, I would say, each of which—I do not think a man can really be called educated. They are possible for most of us; they might be possible for all. We may all acquire some real knowledge of history, some real knowledge in one particular branch or department of scientific method and attainment, some cultivation through music, through poetry, through art, through Nature, of the sense of the Eternal, interpreting man and Nature in eternal aspects. I have had in view the education possible to an ordinary man, not a professed student. A man to become educated need not have time to read much if he read the right books. I would say to those of you who are young: You will probably live seventy years or so. Well, it is quite well to be prepared to live much less; but plan your life as men who will live for seventy years. Plan your intellectual life so. You cannot hope to become educated unless you lay out, and from time to time re-form and re-model, a scheme of your educational life—a scheme of education for a lifetime; unless you write down questions to which you do not expect to be able to find the answer this year or next year, but of which you hope to get the answer ten years on. Plan your educational life as a whole, and then make steady progress year by year, and be very careful that you read the right books. If I had my way, I would have attached to every big public library a department of two or three well-informed men, who must be also sensible, who should have no other business than that of advising students what books to read; because nothing in the world matters so much to a young man or young woman as to be put in the way of reading the right books.

I will say three words in conclusion. They shall be brief words. First, an educated man must have a standard of intellectual excellence. He must know what is first-rate—and you can only get that knowledge by reading the best books; and, I venture to add, by reading those which are not of your own time merely, but which have a certain remoteness and the character of established classics. Of course he must read some books of poetry. Every now and then I come upon a person who, I think, really has never made any serious attempt to read any poetry at all. Occasionally it dawns upon me that they really are better acquainted with Shakespeare in Germany than we are in England. Well, besides poetry, there are certain books which mark epochs—which are full of great dominant ideas. The first book of Hooker's, "Ecclesiastical Polity," for instance, opened to the English imagination the idea of law. Milton's "Areopagitica" fastened upon the English imagination the idea of liberty. Burke's speeches are full of the great idea of what government means. Now these are all books which are masterpieces of style. There you see what great thought is, wedded to the greatest power of language of which English is capable. I would say to anyone who wants to be an educated man: Don't be satisfied without reading some of the greatest books in prose and poetry. And, I would add, the great romances. Don't be content without having read "Don Quixote" (which is a masterpiece, and also a classic in the English translation), and "Gulliver's Travels," and "Robinson Crusoe," and "Pilgrim's Progress." I have not gone beyond England except in one case, and there, as I say, the translation is a classic, too. But an educated man ought to know some one language besides his own; and I would add, apart from all question of its religious value, no man who would be educated ought to be content without being familiar with the Bible.

Then certainly an educated man, besides a standard of style—the sense of what is really great that is gained from reading great books of classical standing—must gain an apprehension of what real knowledge is as distinguished from mere clever guessing or rhetoric. I think you might almost define education as a growing distaste for rhetoric. For example, a man who has read carefully and thoroughly three or four volumes among the great works of Charles Darwin has gained a permanent possession for his mind. That is to say, he has learnt what real distrust of rapid conclusions means, real sifting of evidence, real scientific caution, coupled with a wide outlook. If he has done that, he will always be very distrustful of anyone who begins a statement by saying: "I suppose it will be agreed on all hands." Indeed, I should like to say that whenever you hear anyone say that, you may almost take it for granted he is going to say something which is very doubtful. Or, again, you can get the same distrust of rapid conclusions, the same standard of strict inquiry, from books of history, from reading a writer like one of those who occupied this chair a few years ago—Dr. Creighton. Read his books, and you will be able to see what real love of truth is; how it sifts and discriminates, how unwilling it is to go by its own inclinations. The educated man has a power, a gradually growing power, of distinguishing between careful conclusions and large rhetoric.

And then, lastly, the educated man, though he may, or must, have his own special line, and though omniscience is the foible of only the very ignorant, yet must have some general sense of the unity of knowledge and of the place which his own special study holds in the whole of knowledge.

A GREAT CO-EDUCATIONAL SCHOOL.[1]

By the Rev. Cecil Grant, M.A.
Keswick School.

Co-education has had the misfortune to attract, for various reasons, a half-hearted and qualified support from many who have no slightest idea of its real importance, or even of its real meaning. There has been, for instance, the attitude of the Official Mind. When I meet the individual official—and I have been much favoured in this respect of late years—I am amazingly impressed by his great qualities. But the Official Mind does not depend upon individuals, and has worked, I suppose, at all times and in all places in much the same way. To the Official Mind there comes an enthusiast, making the great claim for co-education and producing detailed proof from America. "Ah!" says the O.M., "*most* interesting. But then America is not England. And here I foresee great dangers—grave sociological difficulties. Besides, how it would upset existing institutions and our own plans! I daresay that in most favourable circumstances, and with you at the head of it, it might avoid catastrophe, but to introduce

[1] From an address at a conference on Co-education held at Hampstead, November, 1904.

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it generally would be dreadfully dangerous, dreadfully dangerous."

A few months later there reaches the O.M. from Slumthwaite-cum-Piggery a cry that the ancient grammar-school must be closed for lack of funds unless the Treasury come to their assistance. The O.M. begins with a sigh the stereotyped response, "We much regret—" when suddenly there comes an inspiration. How about co-education? A score of girls or so would just keep the thing alive. That dogmatic fellow, the other day, certainly talked as though co-education would produce a new heaven and a new earth. Why not try it at Slumthwaite-cum-Piggery? Perhaps he would accept the headmastership. But the governing body of Slumthwaite Grammar School, including My Lord Compromise, Rev. Mr. Facing-both-ways, and Mr. Down-with-the-rates, whilst appreciating the economy of the scheme, find their sense of propriety severely shocked, and finally let in the girls, but endeavour to shut them off from the boys by all manner of inexpensive—and therefore ineffective—barriers. However, the scheme is launched; the O.M. feels delightfully—if somewhat perilously—up-to-date, and the *mot d'ordre* goes round, "Wherever no money is forthcoming, where cheapness is essential, where no separate school can exist, try co-education. The governing body of Slumthwaite-cum-Piggery will be glad to describe the methods which they have adopted with so much success."

The result, as will be seen, is, in the case which I have invented, doubly terrible. Not only has co-education to justify itself in circumstances in which no school of any sort should be condemned to exist, but the system itself, so far from being co-education in any real sense, is, in fact, its most dreadful opposite, yet has sufficient superficial resemblance to brand the real thing with the discredit of its inevitable failure. It is because schools with one or both of these drawbacks do already exist, and threaten to increase in number, that those who make the great claim for co-education yearn for an entirely adequate example of it, which the nation at large shall recognise as such—for a public school not merely in the sense of a school with the generous equipment and non-local character of our great schools, but as being felt, like our ancient foundations, to be a public—a national—possession.

What, then, are the elements of a great and a public school?

Any answer I can supply will, of course, represent no views save my own. If my conclusions have any value apart from the defence of them, with which I am prepared, it is because they have been come by very honestly *at the front*, driven home by hard knocks and shrewd thrusts.

(1) It must be *national*, and not local. Its site must be determined by general considerations. It must draw its support from non-local sources. Its curriculum must not be influenced by the needs of a district. Its government must not be in the hands of those who have special or local interests to serve. On the other hand, since it cannot be built in mid-space, but must find a local habitation, and since we may none of us shirk our duty toward our neighbours, our school must recognise certain important local obligations. It must offer—as far as questions of size, &c., will allow—an absolutely full share of its privileges to as many day-scholars as are prepared to pay the cost, and of a character to make good use of them. It must be willing to offer free scholarships—provided by local subscription or otherwise—to as many children of the poor in the locality as can be shown to possess powers claiming such assistance. It must have local representatives on its governing body. I would myself go further, and urge that it should—without sacrificing its independence—voluntarily connect itself with the whole scheme of local education, from the infant elementary school upwards. I should like to see playing-fields shared, and other things too, which I shall not create apprehension or misapprehension by mentioning here more particularly. I should like, in a word, a truly neighbourly interchange of services, in which the school which had received most to start with would naturally *give* most, and find it *beatius dare quam accipere*.

I believe that some of our great and ancient foundations would have been more and not less truly national had they recognised more fully their responsibilities to their neighbourhood.

(2) Besides being national, it must be *free*, unfettered, uncontrolled. Let us be perfectly clear and open about this. It must be free, for instance, from interference by the Board of Education. That the Board of Education should exercise control over a large portion of our secondary education is a necessity—but it is a necessary *evil*. Interference may make the bad less bad, it is certain to make the good less good. And if the very able body of men on the Board do not entirely recognise this at present, I, for one, by no means despair of their coming to do so. I believe that they will come to say: Such and such a school has a competent headmaster. So long as he lives—and we do not hear that he has fallen into his dotage—we will not come near it, save to get hints from him. We will not ask him to fill up registers or to submit curricula or results of examinations. So glorious and inspiring a thing it is to be free. But this is a digression. For our great public-school liberty is a *sine qua non*. There must be no dependence on grants, no local government, no compulsory inspection save in matters of sanitation; no power of control, even by the trustees, apart from the ordering of the original scheme, the provision of buildings, the appointment and dismissal of the headmaster, and the management of finance.

(3) The school must be planned on a large and generous scale. How far the plan can be at once carried out will depend naturally upon circumstances at present unknown to us—and, indeed, within limits, it matters little. Only, let whatever equipment *can* be provided be of its kind the best. But a plan costs nothing, and matters much. A castle in the air is a much more inspiring thing than a cottage in a mean street, and our great school must from the very start have something really great about it, though it be only great dreams. We must set out with the resolve to want everything which is worth having, and to get everything which we want. If we make our headmaster feel that there is no meanness in the plan, no limit to the desire to get and to give, he will scarcely notice the discrepancy between what is to be and what is. Indeed, there is much to be said for initial difficulties. They are bracing and tonic in themselves, and later they are sweet in the remembrance.

(4) Our school must be of a certain size. Numbers are essential for power, for stimulus, for greatness, for efficient grading. It is certain that, *ceteris paribus*, a school of two hundred has enormous advantages over a school of one hundred, and this apart from the greatly diminished cost *per caput*—an argument which I find frankly, though I suppose unreasonably, distasteful. Cheapness as an inducement has such vile associations for me. But the upward limit of numbers is no less imperiously determined. The word "headmaster" ceases

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to have any meaning for me if it does not connote a veritable knowledge of each individual pupil. In America they appoint more and more openly a kind of organising manager, chosen for the same qualities as the head of a dry-goods store. In England we appoint a genuine headmaster and give him an impossible task. The final limit, then, must depend upon the headmaster appointed, but I cannot conceive that it should ever exceed 250 or fall below 200. If circumstances demanded it, I would have two schools, even in one locality, absolutely independent and entirely parallel. So far from a division according to age, I look upon it as vital that the ages should have as wide a range as possible, and this both to give the headmaster a fair opportunity, and for the help that small boys and girls may be to big ones, and *vice versâ*. I would even have a kindergarten and transition form attached to the school, but this perhaps under a headmistress with separate control, and not affecting the limit of numbers. It is essential, again, that there should be equality between the number of boys and girls and between the number of boarders and day-scholars.

(5) One of the characteristics of our school should, I think, be the avoidance of *faddiness*. It should not, I mean, *aim* at differing in as many respects as possible from other great schools. It should not consist of a mass of novelties—*les dernières nouveautés*, as the shops say. Such schools are fascinating to visit—they abound in America—and are doing a great service to the *future*; but our school is not to be an experiment, but a proof. We should wish to keep abreast of the best educational thought and practice of our time (much of which is to be found in very ancient institutions), *not* to say: "This must be wrong, because so many people believe in it." Greek, for instance, will neither be compulsory nor discouraged. Esperanto will not oust French. Above all, there will be no attempt to limit the headmaster in the matter of disciplinary powers—of reward and punishment—as has been done with such fatal results in America. It made, I expect, very good fun at a Roman circus to tie a man's right hand behind his back and set him to fight a tiger. But then you did not mind *which* won. If you set your headmaster to fight the world, the flesh, and the devil, and care about the result, you will not limit him in his choice of weapons because you have a friend who conquered (with a kiss and nothing more) an insurrection in her nursery. When a boy is on the brink of perdition and the headmaster joins battle over his body with the forces of evil, the thing is at all costs and by whatever means to win, not to try the latest of painless remedies advertised.

(6) *Cost.*—To estimate accurately in detail the cost of building and carrying on the "ideal" school is plainly impossible. On the one hand, it is clear that almost any sum could without difficulty be expended; on the other, there is nothing more certain than that the greatness of a scheme bears no ascertainable relation to its capital or annual expenditure. The rough estimate which follows does not pretend, therefore, to do more than indicate the minimum provision which, in my opinion, those who contemplated the foundation of a first-rate school would be bound to make. To some the figures may seem absurdly low, to others recklessly high. Some will criticise one detail, others another. Everyone will think of omissions. Nevertheless, the figures have been carefully considered, are based upon some experience, and, taken on the whole, may be safely preferred to any hastily improvised (rival) estimate.

I may say at once that a school for boys and girls will cost a great deal more in the building than a school for boys only, will require a larger staff, and entail extra expenditure in several directions. The only saving—and this is of doubtful morality—will be in the smaller salaries claimed by women-teachers.

It must be remembered that it is no part of the theory of co-education that girls should follow the same curriculum as boys. There will naturally be a good many subjects which they will learn in common, but, even if this were not so, the root argument for co-education would remain as strong as ever—that our standard should be the home and home-life. Natural differences should be scrupulously observed and respected, and this will entail more rooms, more class-rooms, larger playing-fields, a larger staff, more equipment.

There are also certain things which the ordinary governors of an ordinary boys' school would look upon as wildly extravagant, but which are nevertheless desirable for the boys, and which the presence of girls will enable them to demand. I shall ask you to be content with this general explanation, and shall not go into particulars in my figures. First, then, for the buildings for a school of 100 boarders and 100 day-scholars, 50 of each kind being girls.

The cost of site depends too much upon hypothetical circumstances to make any estimate useful. I shall leave it out altogether, merely stating that there must be not less than twenty acres altogether available, including playing-fields. It must, of course, be close to good open country, yet, if possible, fairly near London, and within reach of a cultured and progressive community. Buildings: chapel (which I would build *first*), £3,000; big school, class-rooms, gymnasium, workshops, laboratories, changing-rooms, £10,000; headmaster's house, with large dining-hall, four hostels, accommodation for unmarried staff, studies, sanatorium, &c., £15,000; equipment, £2,000; total, £30,000. Of this outlay, £18,000 would be necessary at once. The remaining £12,000 might be postponed.

Cost of education *per caput*, £30 for the first 100 pupils, £20 for the second 100. This makes provision for a staff of about twenty, and does not include such extra subjects as instrumental music, special arts, and languages. Cost of boarding *per caput* for 50 boys and 50 girls, including matrons, service, &c., £35. Adding £1,200 as interest at 4 per cent. upon building money, we reach a total expenditure per annum of £9,700, or with £300 a year for upkeep and incidentals, £10,000.

This would perhaps be most simply met as follows:—200 tuition fees at £25 *per caput* = £5,000, and 100 boarding fees at £50 = £5,000, making together the required £10,000.

A few further observations are necessary. It will be seen that the day-scholars will thus be obtaining their education at something less than cost-price. This is, however, not indefensible, and the share borne by the boarders might even—not unfairly—be increased. Speaking generally, the higher the boarding fees the easier we shall find it to attract boarders. It will be remembered that no provision is made for site. To this must be added pensions for the staff, and entrance and leaving scholarships. These latter, at least—I mean the entrance and leaving scholarships—should be subscribed, and should amount to a sum of not less than £2,000 per annum.

There would still be many things not thus provided and not strictly essential to a great school, but still desirable, and appearing to believers to be quite necessary. These I would leave to be paid for by their advocates, either in extra fees or in donations. The sum set apart for salaries would not be sufficient if it entailed saddling any of the

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staff with the risk and anxiety of hotel-keeping. But this is on all accounts undesirable.

Lastly, it would make a considerable difference in the estimates for the early years if no child were to be admitted above the age of twelve. And this course I should on the whole advise, though I do not regard it as essential. Its effect would be to reduce the total expenditure, both capital and annual, but perhaps rather increase the cost *per caput*.

HISTORY AND CURRENT EVENTS.

How few there are among us who remember 1848! That year of hopes has passed into history along with its successor of disappointments and reaction, and it is almost with a feeling of surprise that we read now and then of persons like the late King of Denmark, who, having played a part then, are only now passing away from our midst. The Emperor of Austria is the only monarch in Europe whose reign dates back so far, and he, like Christian IX., came to his thrones in consequence of those famous revolutions. That was a period when dynastic claims were still a potent force, and even to the end of Christian's life his court was a meeting-place where the cousins of all kinds settled many a germinating quarrel. The late Duc de Broglie once pointed out how France suffered internationally because the president of a republic was necessarily out of such family circles. Will our readers care to ask their pupils to name the territories over which Christian ruled?

AN English princess is apparently going to marry the King of Spain. At any rate, at the date of writing, the courting is going on in just that part of the world where the son of Eleanor of Aquitaine courted Berengaria of Navarre more than seven hundred years ago. Our Plantagenets and Tudors had friendly relations with Spanish sovereigns until the quarrel between Spanish Habsburgs and their Netherland subjects forced us to take the part of the country with which we traded, against their hereditary masters. In Elizabeth's reign we drifted from friendly alliance into fierce commercial and religious hatred of Spain, and the proposed marriage of "Baby Charles" to a Spanish princess roused all our Protestant anger, until "Steenie" became a popular hero for breaking off the treaty and going to war with his Catholic Majesty. Afterwards we were allied with France and with Portugal, Spain's enemies until she was annexed by the Bourbons, and it was not until Spain revolted against Napoleon that English and Spanish fought together again. How curiously interesting it is to see these various memories appealed to in the newspaper correspondence that has arisen on the subject of the anticipated marriage!

OUR revolution is accomplished. The Conservative Government has been overthrown. What has taken its place? What is the meaning of the late General Election? These are questions that are being asked on all sides by people who, ignorant of history, are astonished at what has happened in their midst. Do they not know that England is a part of Europe, and that she therefore shares in the life of Europe? Only, because of our insularity, we suffer less violently from change than do the nations of the Continent. We shared in the wandering of the nations in the fifth and sixth centuries, and Roman Britain became England. We shared in the Reformation of the eleventh century, but while popes and emperors were anathematising one another, Henry I. and Anselm compromised the Quarrel of the Investitures. Our Wars of the Roses were a reflex of Italian and French and German "noble" wars; and we divided our Reformation (of the sixteenth and seventeenth centuries) into two parts, first political and then religious. And, not to multiply further instances, we are now having our share of social democracy, labour questions, &c., and, with our franchise wider than in other countries, the phenomenon is appearing perhaps as soon, but certainly more moderately, than elsewhere. History repeats itself both in time and place.

THE tour of the Prince and Princess of Wales in India has doubtless been the occasion of many geographical lessons. Incidentally, we have learnt much of our fellow-citizens in the East—of the origin of the Sikhs, for example, and of the interest to be found in the history of Rajput and other Indian chiefs. Among other hosts of the Prince has been the Maharajah (=*magnus rex*) of Mysore. That is one of the still independent States of India, as independent of the British Empire, that is, as any but the frontier States of the north. Its international relations are controlled by the British Government, and its rulers must behave themselves according to British ideas; and it was only in 1881 that Mysore was restored to its native ruler after a sequestration of fifty years. But now it has "a sort of representative assembly, which meets annually for a few days to lay before the ruler the petitions and grievances of the various classes, and to hear from his own lips a paternal explanation of the measures proposed by his Government." That is where *we* were in the fourteenth century. When will Mysore move on? and whither?

ITEMS OF INTEREST.

GENERAL.

SECONDARY education was not specifically referred to in the King's Speech at the opening of Parliament. "My Lords and Gentlemen" were informed, however, that a Bill would be introduced at the earliest possible moment for amending the existing law with regard to education in England and Wales.

REPLYING to a letter from Mr. A. H. D. Acland, formerly Minister of Education, Mr. Birrell, President of the Board of Education, has announced that provision will be made in the Estimates this year for a considerable increase of the Exchequer grants in aid of secondary schools; also to alleviate the burden now placed upon local authorities in respect of the education of teachers, and to assist further the building of training colleges for teachers by local authorities.

THE final report of the Departmental Committee on the Royal College of Science has been published. The committee has been considering for the past two years a scheme to provide advanced technological instruction and opportunities for research in applied science. It is proposed to establish a great institution at South Kensington, in which such existing colleges as the Royal College of Science, the Royal School of Mines, and the Central Technical College will be incorporated. The precise relations of the new institution with the University of London have yet to be defined. The report shows that the Government has agreed to contribute the buildings of the Royal College of Science and an annual grant of £20,000, the London County Council is prepared to provide a similar annual grant, and a capital sum of £100,000 has been offered by the firm of Messrs. Wernher, Beit, and Co. for initial equipment. The report suggests the immediate

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appointment of a governing body of forty members to begin with, of whom ten shall be Government nominees, and five each appointed by the University of London, the London County Council, and the Council of the City and Guilds Institute. This body will act as the first management authority, and discuss the further details of organisation. We hope to deal more fully with the report in an early issue, in so far as it is related to secondary education.

We are glad to see that attention is being directed to the excellent work done by the Sunday-schools of this country. The editor of the *Sunday School Chronicle* recently put together the personal testimonies of many leading men and women as to the permanent influence of the training received in the Sunday-school. Most striking of all is the anonymous evidence of "An Old Potter," who was a school-fellow of George Smith of Coalville. After describing the bestiality and immorality of the factory where he began to work at the age of nine, he says:—"Amidst these unfriendly and perilous circumstances, the influence of the Sunday-school stood me in good stead. It was not so much that I understood all the evil about me and saw into its baleful depths, as that I had an inward influence which gave me an opposite bias." When the history of English education comes to be written, full justice must be done to that army of nameless workers who, before education was organised by the State, trudged down week by week into the slums where the poor lived, and, with the spirit of the missionary which was in their hearts, compensated for the pedagogic defects which were in their teaching.

This we recognise to the full, but we are forced also to recognise the failings of the Sunday-school. If "order is Heaven's first law," then there is hardly any place where it is so flagrantly set at defiance as the Sunday-school. The usual lack of discipline is an object-lesson to all the children in disorder and, we fear also, irreverence. Whatever the lesson that is taught from the desk, the lesson that is learned by the children is too frequently a lesson in bad conduct, mercenary sponging, and disrespect to sacred things. Nowhere is there so much waste of well-meant effort as in a Sunday-school.

It is therefore encouraging to find that the Educational Faculty at Manchester University has grappled with the problem in a practical way. For some time there have been lectures to teachers by Mr. Thistelton Mark; he is now arranging to take over the primary departments of four large Sunday-schools in Manchester, to train the teachers and organise the teaching. These Sunday-schools are to be in touch, on the one hand, with the regular day-schools of the city, and, on the other, with the theological training colleges. The theological students will visit the schools and observe methods, and the headmistresses of the Kindergarten Training College in the city and of the High-School for Girls, together with the high-master of the Grammar School, will act as periodical inspectors. This experiment "looks hopefully"; it is, we are glad to note, the exact antithesis of Dr. Aked's scheme, which aimed at converting the Sunday-school into a junior P.S.A., with addresses every Sunday, and a different speaker each time—a scheme which sacrificed that pastoral touch at present underlying all Sunday-school work, which, spite of all its faults and failures, has saved it from corruption, and makes it notwithstanding one of the redeeming features in our social life.

We understand that a new grammar school is to be opened at Northallerton, which will provide accommodation both for boys and girls. It is probable that a pupil-teachers' centre will be established later in connection with the new school.

Viscount Hayashi, the Japanese Ambassador, recently distributed the prizes to the successful students of the Northern Polytechnic Institute, Holloway Road, N., and in his address said that scientific research made such strides in the past century that it is no exaggeration to assert that the present is the age of practical application in every phase of modern life. Therefore there is nothing more important in the secular education of a nation than institutions which keep abreast with the stride of science. Viscount Hayashi went on to say that he took part in the administration of the Technical College at Tokio. That College was established some thirty years ago with the help of many British professors and men of science whose names are well known in Europe, and from it thousands of students have been sent out to take part in engineering and other works necessitating the scientific application of the mechanical arts. Japan owes very much to that great educational work, and the Japanese people are very grateful for the assistance which Great Britain gave in this department.

In his presidential address to the Association of Technical Institutions, Sir William Anson, M.P., surveyed the courses of study and the education provided by secondary schools in the past and in the present, and noted what he conceives to be shortcomings. It is strange to look back, he said, upon the education given at our great public schools thirty or forty years ago. Education it was, in the real sense of the word, but of a peculiar sort. What was offered to the English public-schoolboy was a life free, generous, wholesome, with abundance of leisure and of opportunities for study. The boy was required to read considerable quantities of the great classical writers, not systematically, not taking specific books, but falling in at the point which the class happened to have reached at the moment he entered it. Nor, as a rule, was any attempt made to explain to him who the writer was, what was the general character of his work, why it was selected for study, or what was the relation of the part which the boy happened to be reading to other parts of the same work or other works of the same author. Still, the boy was brought into contact with much fine literature, if his acquaintance with it was not made as profitable as it might have been; he sometimes acquired a considerable facility in the composition of Latin or even Greek prose and verse, he usually had access to a good library, and leisure for desultory reading. Mathematics he might learn if he chose to take advantage of the teaching available. History he was not taught, though he was expected to know some for purposes of examination. Geography was certainly taught, but not as we should teach it now; the teaching consisted mainly in the ascertainment of the modern names of places of note in classical antiquity.

Continuing, Sir William Anson said that we recognise our past shortcomings. Our needs in the matter of science have been more fully realised and more effectively met than have our needs in the matter of modern languages, but we are trying hard to meet both. And yet we have blundered over the common stumbling-block which tries us so often in our educational endeavours. We have overlooked the human element in the transaction. We have said: "Science has hitherto been neglected, so have modern languages.

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Let us provide laboratories, and a curriculum in which all these subjects shall be included, and all will be well." But the present result of our efforts to correct failings in the past is unfortunate in two ways. In our secondary schools we have put into the course of study all those subjects the neglect of which has been referred to, and we have taken out comparatively little of what was there before. What, then, is to become of the poor boy who is expected to learn two or three languages in addition to his own, who is taught history, geography, science, and mathematics as well, and who in the intervals of study is expected to regard his games as a part of the serious business of life? The impression left upon the boy's mind is that he is always at work upon something, but never long enough at work upon anything to create an interest, or to convey substantial knowledge, and that the wearisome effort which results in a smattering of many things, and a mastering of none, creates a feeling of disappointment or disgust.

MEMBERS of education committees, managers of schools, and teachers, are the three essential props by which our elementary school is supported, and they are in general as far removed from one another as the three feet of a tripod. The conference held on February 10th between the members of the West Sussex and Chichester Joint Education Committee and the managers and teachers of schools under their control is therefore of noteworthy importance; for it represented a praiseworthy attempt to focus three separate points of view upon what should be the common object of them all—the physical, mental, and moral development of the child. It would be to the advantage of educational effort if similar annual conferences were convened by other education committees; and if the principle could be extended to secondary schools, the governors meeting the head and the assistants occasionally for the discussion of problems in which they are all supposed to be interested, the result would be encouraging.

AT the Chichester conference the chairman of the Education Committee, Mr. W. E. Hubbard, gave an address full of sound sense as to the aims of educational work in primary schools. The matters subsequently discussed were the teaching of cookery, gardening, and other practical subjects, the teaching of the laws of health, and the age at which children should be admitted to public elementary schools. Practical teachers expressed their sympathetic interest in such useful subjects as cookery and gardening, but pointed out at the same time that the subjects could not be taught successfully without increased staffs in many cases, and the provision of other facilities.

As to the age at which compulsory attendance at school should commence, there was a diversity of opinion. The West Sussex Education Committee, in common with others throughout the country, has wisely decided gradually to exclude children under five years of age. In countries like Germany, where physical and psychological considerations are borne in mind in formulating an educational system, the education of children is compulsory from the age of six to fourteen, which are the most important years in the mental history of the average child. It may be convenient for some parents to send infants under five years of age to school, but education committees have complete justification in declining to accept the charge unless they are prepared to equip rooms for kindergarten instruction by teachers specially qualified to give it. In rural districts, where children often have to walk a mile or two to school, whatever the weather may be, to make attendance under five years of age compulsory is not only a mistake—it is a crime against common sense and the laws of healthy development.

THE London branch of the German Language Association held its seventh annual meeting on February 3rd. The objects of the association are to extend the knowledge of German literature and to assist in fostering friendly relations between Great Britain and Germany. Dr. Aloys Weiss, the president, in the course of his address said that the number of members of the branch has increased from 542 to 600 during the past year; half of that number are English by birth or naturalisation. One of the objects of the general association is to purify and simplify the German language, and the London branch has endeavoured to advance the study of German in this country by extending the knowledge of German literature, and thus contribute towards Anglo-German friendship. The motto of the association throughout the seven years of its existence has been "Loyalty to the German Fatherland and friendship to England." Prof. W. Rippmann afterwards read an interesting paper on "Allegories of Hans Sachs."

THE distribution of the prizes and certificates awarded at the twenty-first grand annual competition in the French language and literature carried out by the National Society of French Professors in England took place in London on February 3rd at the Mansion House, under the presidency of the Lord Mayor. M. Paul Cambon, the French Ambassador, introduced the Society to the Lord Mayor. He said these annual competitions continue to increase in importance every year, not only from the point of view of the number of competitors, but also from that of the difficulty of the tests. The youthful candidates have shown their desire to familiarise themselves more and more with the French language and literature, and shown also that they are becoming stronger and stronger in French. The following were the principal awards:—Sèvres vases given by the President of the French Republic—*hors concours*, Royal Military Academy, Woolwich; vases, Clapham High School for Girls and Cheltenham College. Gold medals given by the Minister of Public Instruction—Miss T. Frank, Kennington High School; Mr. F. Ayrton, Cheltenham College. Silver medals given by l'Alliance Française—*hors concours*, the Misses M. Fowle and M. Barringham, Ladies' College, Guernsey; medals, Miss I. M. Whitechurch, Blackheath High School; Mr. A. H. Scott, Cheltenham College; Miss M. Tirard, pupil of Mlle. Paquier. Silver medal given by M. Paul Cambon—Gentleman Cadet M. Goldman Monk, Royal Military Academy, Woolwich. Silver medal given by M. Camille Barrère, French Ambassador in Rome—Gentleman Cadet A. G. Glenday, Royal Military Academy, Woolwich. Special competition medals—Miss C. Bagnall, Clapham High School; Mr. A. W. Douglas, Owen's School, Islington. *L'Entente Cordiale* (Anglo-French Society) competition for *bourses de voyage*, value £20 each—Miss M. H. Campbell, Royal Holloway College; Mr. E. W. Lynam, University College, Cork. Competition of *l'Entente Cordiale* (Anglo-French Society) for *bourses de voyage*, value £10 each—Miss M. C. Thompson, Mr. A. R. Wollrom.

IT is not often that the vice-rector of the Academy of Paris communicates directly with the French schoolboy. M. Liard has, however, just adopted the direct method of appeal in his effort to arouse sympathy for the crusade against the increase of tuberculosis in large cities. The rector proposes that an association should be formed in

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each *lycée* to raise a fund for sending poor children back to the country under conditions that will enable them to earn their bread on the land. "For," says the circular, "it is among the transplanted that tuberculosis makes most havoc." If the suggestion should become effective, "you will," M. Liard tells the *lycéen*, "experience the joy and pride of helping to save some lives." And the expense need be but very small, for the maintenance of each child costs one franc a day in the society for which the rector holds a brief, viz., "L'Œuvre de la Préservation de l'Enfance contre la Tuberculose," founded two years ago by Dr. Grancher.

At a recent meeting of the Paris Academy of Medicine M. Josias read a paper founded on some inquiries made by M. Lop, and insisted upon the necessity for taking measures to prevent the transmission of infectious diseases by school books. There can be no doubt that scarlet fever is transmitted in this way, and it is highly probable that tuberculosis, diphtheria, and other contagious diseases are also spread in a similar manner. M. Lop proposes that at the end of each scholastic year books which are to be handed on to other scholars should be disinfected and all books in the possession of any child attacked by an infectious disease should also be disinfected. Exposure to high-pressure steam for forty minutes is an excellent disinfectant, but this method destroys bindings. The most practical method is that of Michel, which is based upon the use of the vapour of formic aldehyde.

M. Bienvenu Martin, Minister of Public Instruction in France, has issued a circular relative to the *diplôme d'études supérieures*. This certificate is valued by many students who do not intend to become teachers, as evidence of attendance and diligent study at a university. In July, 1894, greater latitude was shown to candidates who offered history and geography, and ten years later, in June, 1904, a corresponding privilege was shown to those who offered philosophy, classics, and modern languages. The results of the latter experiment have now been described by M. Martin as satisfactory, but he learns that several faults are appearing, against which candidates should be warned. The object of the generalisation of studies was to allow candidates for the *aggrégation* to separate better their scientific from their professional education. Experience gained from the examination of candidates offering history and geography has shown that students are inclined to be too ambitious and to choose subjects too vast, so that their voluminous reports are incomplete, badly co-ordinated, and hastily arranged. It is better for candidates to confine themselves to a circumscribed area and examine minutely the materials collected. They will thus accustom themselves to a precise examination of a text, and the subject of their *mémoire* will be proportioned to the strength of young people making a *début* in scientific work. A faculty is well advised in drawing up questions round which the subjects of *mémoires* can be grouped. This programme should remain in force until the faculty deems it exhausted. Candidates are further warned that the subjects accessory to the examination should not be neglected in favour of the *mémoire*. Excellence of the latter will not be allowed by juries to atone for weakness in the other parts of the examination.

The attention of the Teachers' Registration Council has been directed to the fact that on July 31st, 1906, the date on which Regulation 4 ceases to be operative, the results of certain final examinations for a degree, and also of certain of the examinations mentioned in the appendices of the Teachers' Registration Regulations, will not have been made known, though the examinations will have been undergone before that date. The council has accordingly ruled that teachers, whose qualification for registration is affected by the publication of the results referred to, shall be permitted to make provisional application for registration before July 31st, 1906. The council will be unable to consider applications under Regulation 4, provisional or otherwise, which are not lodged at the Registration offices *on or before July 30th*, 1906.

The Plymouth Education Committee has resolved that a list of efficient private schools shall be published from time to time; that in order that the efficient schools may be ascertained, the thirty-five schools in Plymouth having a registered number of pupils exceeding twenty shall be offered inspection under the Board of Education Act, 1899, at the expense of the education authority; that inquiries preliminary to inspection be made in accordance with the schedule prepared by the committee; that the schools be informed of the aids and privileges which may be given by the authority under certain conditions to recognised schools, and that they be further informed that the full report on the schools by the inspecting agency will not be published without their sanction. The resolution is to be put into effect forthwith.

Following the line of reasoning in "H. G. A.'s" letter on "Military Training in Schools," published in our last issue, the Hampstead Peace and Arbitration Society has distributed a circular to school managers and schoolmasters dealing with "the doctrine that patriotism consists in the encouragement of the military spirit by military exercises." The circular maintains that "there is far greater opportunity for the display of public spirit in the exercise of the arts of peace," and appeals to teachers to use their best efforts to counteract the doctrine of patriotism as commonly accepted. That military training is necessary to the full development of bodily strength is denied by the circular, and attention is directed to exercises encouraged by the life-saving brigades for securing the preservation of life in time of danger and in rendering first aid in cases of accident. These processes, it is urged, when accompanied by Swedish drill, tend to a complete physical development, to keen observation and to sympathy with suffering and weakness. The circular is signed by a body of representative persons, among whose names we notice those of Canon Barnett, Mrs. Sophie Bryant, and Mr. John Russell.

The review of the work done during the past year by the Association of Assistant Mistresses, which was included by the president in her address at the recent annual meeting, shows that the association maintains its character as a working society. Copies of the association's salary scheme and form of agreement for assistant mistresses were sent to all education committees of county and borough councils. The association has given attention and sympathy to the scheme for a Federal Council of Secondary Teachers, arrangements for which have yet to be completed. The association has taken part in the conference initiated by the Association of Assistant Masters on salaries in London secondary schools and in a deputation sent by the conference to the London County Council, and joined in the publication of two pamphlets on the subject. Its representatives have conferred with those of the Headmistresses' Association on tenure. While holding that assistant teachers should be servants of the governing body, and dismissible by it alone, the association is strongly

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of opinion that the growing practice—among local authorities—of taking the initial selection of the staff out of the hands of the headmistress is injurious to the efficiency of the school, and considers that the staff should be nominated by the headmistress, and appointed after a period of probation by the governing body. The Association of Assistant Mistresses has a representative on the committee of the Classical Association, and its science sub-committee has joined with the Public School Science Masters in a deputation to the Cambridge Examining Syndicate. In view of the rapid development now taking place in the organisation of secondary education, the executive of the association has appointed a sub-committee to collect information on the action of local authorities with regard to secondary education.

THE class-lists of the Cambridge Local examinations show that the total number of candidates entered for the examinations, held in December last, was 15,144, exclusive of 1,931 candidates examined at colonial centres. In the Senior examination, 845 boys and 1,051 girls passed, 106 boys and 22 girls being placed in the first class. Sufficient merit was shown by 492 boys and 148 girls to entitle them to exemption from one or both parts of the Previous examination. Of the junior candidates, 3,086 boys and 2,007 girls passed, the numbers placed in the first class being 416 and 76 respectively. In the Preliminary examination, 2,086 boys and 1,446 girls satisfied the examiners. The awards of scholarships and prizes, the examiners' reports, the tables showing the success or failure of the individual candidates in each subject, and the class-lists for the colonial centres, will be published in the course of the month of March.

IN the *Monthly Record* of the League of the Empire it is announced that the following message has been received by the League from the Colonial Office on behalf of the Secretary of State for the Colonies:—"I am to convey to you an expression of Lord Elgin's satisfaction that the work of the League is so well appreciated in the Colonies, and of his lordship's interest in the historical publications which are being undertaken by the very competent committee whose services the League have been able to enlist." Through the New Zealand Education Department, Mr. Seddon, the Premier and Minister of Education, sends the League the following subjects for school debates or essays:—"British Colonisation in New Zealand," "Maori History," "The History of New Zealand up to 1900."

IN a letter to the *Pall Mall Gazette*, Mr. H. F. Trippel directs attention to an anomaly in the results of the competitive examination in December, 1905, for admission to the Royal Military Academy, Woolwich, which was the first examination held under the new Army regulations. Mathematics is a compulsory subject, and must be taken up by every Woolwich candidate. Among the competitors there was one who scored zero in mathematics, and yet found a place among the successful candidates. It has therefore been proved that a candidate can pass the competitive examination for Woolwich without securing any marks in the "compulsory" subject, mathematics. We agree with Mr. Trippel that a sound remedy for this extraordinary possibility is necessary at once, since all candidates for commissions in the Royal Engineers or Royal Artillery ought, in view of their future work, to have a sound knowledge of the fundamental parts of mathematics.

CANDIDATES who wish to sit for the next examination for fourth-class clerkships under the London County Council must send in their applications to the Clerk, County Hall, Spring Gardens, by March 16th. Their age must then be more than eighteen and less than twenty-three years. The examination consists of two parts; from the preliminary, to be held on April 2nd to 4th, will be exempted those who have passed the matriculation examination of any of the universities of Great Britain, the higher or senior local examinations, that of the Joint Board, or the L.C.C. preliminary in 1904 or 1905; the competitive examination will take place on May 14th and the following days. The subjects, of which any four may be taken, in addition to general knowledge, are:—English language and literature, pure mathematics, applied mathematics, any modern language and literature, any other modern language and literature, Latin, English history, economics, outlines of English local government, elements of English law, mechanics, physics, chemistry, and bookkeeping and accountancy. There are four classes of subordinate officials of the Council with salaries rising from £80 to £300; there are several appointments at higher salaries, which are usually filled by promotion. The persons appointed are required to give their whole time to their official duties, and are subject to the Council's regulations in respect of the superannuation and provident fund.

THE competitive examination for admission to the Royal Military College, to commence on June 26th, is the second under the revised regulations. Applications must reach the Secretary, Civil Service Commission, not later than April 2nd. "Each candidate must, on the first day of the examination, hand in to the superintendent of the examination room either (*a*) a 'leaving' certificate on a form approved by the Army Council, or (*b*) a 'qualifying' certificate issued under the authority of the Army Council, or (*c*) a War Office certificate that he has been exempted by the Army Council from the necessity of obtaining either a 'leaving' or a 'qualifying' certificate." The subjects of the examination, for each of which 2,000 marks are obtainable, are:—Class I., *Compulsory*, English and French or German; Class II., *Optional*, mathematics i., mathematics ii., history, German or French, Latin or Greek, science. Only two of the subjects in Class II. may be taken, and if one of these be a modern language it must be different from that selected in Class I. In addition to the above-named subjects, candidates may take up freehand drawing, to which 250 marks will be allotted. In the syllabus of subjects, practical work appears in mathematics i. and ii., and history includes (1) a general paper on English history; (2) (*a*) a period of European history, or (*b*) a general paper on ancient history; and (3) a military biography, prescribed annually.

THE next examination for admission to the Indian Police Force will be held simultaneously with the June examinations for admission to the Royal Military College, and the papers for the two examinations will be the same. The revised scheme requires that candidates take up not more than five of the nine subjects named above, of which English must be one. Applications must be sent in not later than May 1st. The age limits are nineteen and twenty-one years on June 1st. This service has the advantage over the Indian Forest that successful candidates at once take up remunerative appointments without any further expensive period of training in this country. Probationers must sail not later than October; a free passage is provided. They receive Rs. 250 a month; on passing the necessary departmental examination they become assistant superintendents of police with Rs. 300 a month, increasing to Rs. 500. There are excellent prospects

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of promotion to the rank of district superintendents with salaries of from Rs. 500 to Rs. 1,000; there are a few superior posts with salaries of from Rs. 1,000 to Rs. 2,500. The competition at this examination from 1897 to 1904 has averaged four to one. Successful candidates are required to satisfy the Civil Service Commissioners of their ability to ride. They must also pass a medical examination, which, judging from the number of rejections last year, is more severe than that for other appointments in the service. In their general notices the Commissioners suggest that candidates should be examined, before they compete, by the medical adviser of the family or any other qualified medical practitioner, who should bear in mind that the question of fitness involves the future as well as the present, and that one of the main objects of medical examination is to secure continuous effective service, and, in the case of candidates for permanent appointments, to prevent early applications for pensions.

SCOTTISH.

General consternation has been caused in Scotland by the threatened loss of grants to the extent of £211,000, representing the unappropriated surpluses for the past two years of the equivalent grant that came to Scotland in consequence of the increased grants to England under the Education Bill of 1902. Owing to the failure to pass the Education (Scotland) Bill, in which provision was made for the allocation of the grants, this sum was carried to a suspense fund until Parliamentary authority could be obtained for its disposal. The Auditor-General has now intervened, at the instance of the Treasury, on the plea that all unexpended balances in last year's estimates revert to the Treasury. In ordinary circumstances this may be accepted as a thoroughly sound business principle, but the present case is quite exceptional. For two successive years, plans for the allocation of these funds have been submitted to Parliament, and only the impotency of the parliamentary machine prevented their being passed. It would be intolerable if Scotland, in addition to losing her long-overdue Education Bill, should also be mulcted in a sum of almost a quarter of a million. Some way out must certainly be found.

The return of Sir Henry Craik as member of Parliament for the Universities of Glasgow and Aberdeen has given the greatest satisfaction in educational circles. His undoubted sympathy with the aims of Scottish teachers and his exceptional knowledge of all that concerns Scottish education should make him a constant and effective advocate of everything that makes for educational progress and the welfare of the teaching profession. Sir Henry was returned by a substantial majority over his two opponents, and in that majority were represented men of all shades of political opinion. Their support was rendered to him out of admiration for his great services to education in the past, and from a desire to have the benefit of his unrivalled knowledge in the many educational problems that await the solution of the new Parliament.

Captain Foster, H.M. Inspector of Physical Instruction, in the course of an address to the Edinburgh teachers, said that in the past he was afraid both inspectors and teachers were satisfied by any sort of movement where uniformity was secured. The effect of each movement on the young and tender bodies of the pupils was seldom considered. If fifty pairs of hands were pushed out at the same time and fifty pairs of feet stamped the floor at the same instant it was considered sufficient, although, as a matter of fact, many might be accentuating and confirming the common defects of school children, stooping, sinking and contracting the chest, and bending the spine too much in the upper and lower part. Most of those faults of poise were due to the unavoidable repose of school life, and the bending of the upper part of the body forward over desks and tables. In these circumstances the vital parts, lungs, heart, and digestive organs, all suffered. The exercises in the official handbook were all directed to counteracting these defects, and he hoped in the near future to make such additions and alterations in it as would render it a still more useful guide to the teachers who took part in this work.

Edinburgh School Board, by a majority of nine to five, has disapproved of the new memorandum on the training of teachers. The majority contended that while abolishing the pupil-teacher system it created a new method of training, under non-representative authorities, without full security that candidates would receive adequate practical training. A committee was appointed with power to take action to prevent the minute from being put in operation. Forfar School Board is unanimous in protesting against the new regulations. Their objection is founded chiefly on the ground that the training of teachers is intimately associated with the whole educational system, and no attempt should be made to deal with the part out of relation to the whole. The question would naturally arise in connection with the next Education Bill, when full opportunity would be given for its consideration. The Board also protested against the practice of getting changes vitally affecting the educational interests of the country rushed through Parliament by means of minutes laid on the table of the House for a short period, and without necessarily having to undergo Parliamentary criticism.

Sir Henry Craik, addressing the teachers in the northern counties, said that a satisfactory system of retiring allowances was essential for any large and important professional class paid by annual salary. The present Superannuation Act did not fulfil that condition, and he felt he was not betraying any dangerous secret when he said he was dissatisfied with that Act. In particular, he regretted the fact that the power given to Scottish school boards to supplement the pensions of their teachers had been withdrawn. While the Act was being considered, he pressed his objections on that point to the furthest point that the discipline of the service would permit. He explained his position fully and frankly to the representatives of the Scottish teachers who were watching over the Bill, and it was startling to him to hear a few days later that these representatives were prepared to accept the withdrawal of this valuable privilege at the instance of the English teachers. He had always maintained that this surrender was a grave mistake, and, so far as his influence would go, it would always be exerted in favour of the restoration to school boards of the power to supplement pensions.

A circular has been issued by the Scotch Education Department intimating the conditions for the award of the leaving certificate in Gaelic. For the present there is to be only one standard recognised for a pass, and that will be equivalent to the lower grade in other language subjects. Conversation will form an essential part of the examination, and the written paper will—as in other languages—consist chiefly of translation and re-translation. One important provision in regard to the issue of certificates is that, provided the qualifications of the teacher and

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the scope of the curriculum on the subject have been approved by the Department, due weight will be given to the verdict of the teacher in determining the success or failure of individual candidates. This is a concession that has long been looked for in regard to other subjects, and it may safely be anticipated that a provision so thoroughly educational will soon be found governing all the subjects in the curriculum.

IRISH.

THE first deputation received by Mr. Bryce as Chief Secretary for Ireland was concerned with technical instruction, and his reply was so sympathetic that it has aroused abundant hope that the new Government will do their best for the improvement of Irish education in all departments. The deputation included the Roman Catholic Bishop of Waterford and the president of Queen's College, Cork. It was an easy task to point out that technical instruction is greatly crippled by lack of funds, which damps enthusiasm and prevents the accommodation of proper buildings alike for teachers and students. In fact, technical instruction is only in the initial stage in this country, and instead of receiving very much less than its proportionate share of Imperial funds, it should receive considerably more, as initial expenses are always heavy. In his reply, Mr. Bryce asked the deputation to make inquiries and let him know as definitely as possible how much would be wanted in Dublin, Belfast, Waterford, and Cork, and how much is spent in Ireland upon technical instruction as compared with England and Scotland.

MR. BRYCE then went on to deal with the relations of primary, secondary, and technical education. Good primary education is essential for good secondary education, and good secondary education is absolutely essential for the progress of technical instruction. It becomes therefore necessary, in considering the question of building-grants for technical instruction, to consider whether in various towns improved secondary-school buildings may not also be requisite, and to combine both if possible. The following words are hopeful:—"I assure you I feel strongly how much is to be done in all branches of Irish education. I don't think there is anything to which the efforts of the Government should be more directed than the endeavour to extend education in Ireland in all its forms. It has always seemed to me that one of the great assets of the country is the extraordinarily keen intelligence of the people and the interest they have in learning. . . . They are a natural asset of the highest value, and everything that is spent in developing the national talent will be of the greatest possible benefit to the country. I hope that much will be done to simplify your educational system. I conceive that if that were done it would strengthen our case with the Treasury, and that we could ask for a more liberal treatment of Irish education than now exists if we could present a scheme involving greater economy and efficiency than are attained at present."

THE mid-winter issue of the quarterly *Journal* of the Department of Agriculture and Technical Instruction, which has recently been published, is distinguished by a series of papers on practical forestry. For those interested in education, however, its chief feature is a verbatim report of the eloquent address by Dr. M. E. Sadler delivered last autumn in the Rathmines Town Hall on "Commercial Education." It should be studied by all persons who wish to embark on "commercial sides," whether in secondary schools or places of technical instruction.

AT the annual meeting of the Central Association of Irish Schoolmistresses a well-deserved vote of thanks was passed to Miss A. Oldham for her great services to Irish education while she was secretary of the association; and a paper was read by Miss E. Cunningham on "High-school Work in England." The paper traced the course of events which led to the establishment of girls' high-schools in England in 1872, sketched their subsequent history and development, and gave a detailed account of their constitution, aims, and methods. The discussion that followed showed a great desire for fuller development of the teaching of classics in girls' intermediate schools, and for the establishment of a proper system of registration of teachers in this country.

THE Irish Association of Women Graduates and Candidate Graduates is starting a new literary and debating section, and at a recent meeting instructed its provisional committee to take the necessary steps to draw up a programme for the present session, and to make arrangements for beginning meetings in February.

THE Dublin Education Society has elected for its president for 1906 the Rev. Dr. F. M. Watters, the president of the Catholic University School in Leeson Street. Some comment has been passed on the fact that at the annual meeting no statement of accounts was presented as prescribed by the Society's rules. The secretaries for this year are Mr. J. Macken, of St. Patrick's Training College, and Mr. Hanly, of the Dorset Street Schools.

WELSH.

AT the annual meeting of the Llangollen Flower Show the promoters discussed the increasing importance attached to practical country education in such developments as nature-study, country excursions, &c. It was suggested that floral societies should play their part in these matters. As a practical measure, they decided to approach the various educational authorities in the district and to offer to admit pupils of the schools to the show-ground without entrance-fee. Whilst such an attitude shows enthusiasm for enlisting general interest in horticulture, it is difficult to see logically any limit to the application of such a principle. Are all the possible avenues for gaining useful experience and knowledge to be thrown open to every boy and girl, as *free of expense* as the school—*e.g.*, circuses, theatres, concert-halls, all manner of useful entertainments? However, in the instance quoted, it was gracious of the Llangollen Floral Society. We are not sure but that, even in this case, as much good might have been done by granting the privilege of free admission, if the educational authorities gave their consent, to those boys who had done *good work* and shown aptitude in nature-study and botany.

THE Oswestry Grammar School was founded, according to Leland, as early as the reign of King Henry IV. The Oswestry Higher Education Committee is now said to be discussing "whether the Town Council should be got to take steps to compel the Grammar School governors to make the school a secondary one, or should ask for a secondary school to be built." The Education Committee has passed the following resolution:—"That this committee is of opinion that steps should be taken to place the Grammar School under the Board of Education as a secondary school, and that representations be made to the Oswestry Town Council urging them to make the necessary application for the recognition." It is, of course, clear that in a town like Oswestry there is not room for an indefinite number of schools, but it is also clear that if

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the choice is between making all the secondary schools of the county of precisely the same type, and of having at least one public secondary school in the county a good classical school of the Grammar School kind, at least the latter alternative should receive careful attention, if not from the town, at least from the county. Or it may be thought that Shrewsbury School suffices for all needs in this direction.

The second Welsh National Conference on the Training of Teachers has been held at Shrewsbury. There were present representatives of the University, the Central Board, and every county education committee in the Principality. The object of the first resolution was to suggest that pupil-teachers should spend the first of two years of apprenticeship at secondary schools or at pupil-teacher centres, and the second year in practical work in connection with the teaching in an elementary school, or *vice versa*. This was considered, however, a temporary measure. The conference agreed that it is desirable that the pupil-teacher system should be abolished as soon as practicable. A most enthusiastic protest was then made and entered against the half-time system, as unsatisfactory both to the heads of the primary and of the secondary schools. The second resolution expressed the opinion that a Welsh National Council of Education should be established, to which should be referred the question of the training of teachers—primary and secondary—for Wales. The third resolution asked the Board of Education for an increase in the grant to the local education authorities for the purposes of the training of teachers. A scheme was submitted from Cardiganshire, in which county it is proposed to abolish the pupil-teacher system, if the committee can get from the National Exchequer a sum equivalent to a halfpenny rate. It was further decided that pupil-teachers should not be counted as effective members of any school staff, and that prospective teachers, as far as practicable, should be granted facilities for obtaining degrees.

At a meeting of teachers at Carmarthen, the president of the local association, Mr. W. H. Mitchell, spoke on the rural schools. He said it would be a bright day when village schools were financed according to their *needs*, and not their needs supplied according to their finances. The intermediate schools in Carmarthenshire were provided with one adult teacher to every twenty pupils, whereas for the 7,000 scholars in the purely rural elementary schools in the county they had possibly 100 adult teachers, or one for every seventy children.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Cambridge Phonographic Records. Edited by Mrs. Frazer. (Heffer.) 3*s.* each.—We congratulate Mrs. Frazer on her enterprise in undertaking to furnish teachers of modern languages with a series of phonographic records. There are French records by M. Chouville, French songs by Mr. von Glehn, German recitations by Dr. Breul, and we are promised Latin and Greek records—an exceptionally bold venture. The sample records submitted to us are, on the whole, very creditable. Doubtless, as Mrs. Frazer's recorders become more experienced and the instruments are improved, we shall gradually have results more satisfying to the æsthetic sense. It cannot be denied that at present the voice suffers in reproduction, and that speech is harder to reproduce satisfactorily than song. Probably it is largely a matter of experiment, and we have no doubt that Mrs. Frazer will be able in course of time to improve on these very respectable first attempts.

English.

Lingua Materna. By R. Wilson. 1–208 pp. (Edward Arnold.) 3*s.* 6*d.*—This is a much wanted book, but it might have been compressed. We really do not need the chapters on grammar, on the study of words, and even the schemes of work. All this has been done many times before, and we would willingly spare these pages if the author had filled out the admirable sections on taste in literature and on method. But he hits the nail on the head when he practically says, "We do not teach literature well, we do not encourage taste, *because the teachers themselves are not soaked in literature.*" No book on any section of teaching is complete unless it speaks plainly to the teacher, and this book ends with a chapter on the teacher's equipment. Why did not the writer put this chapter first, and print it, Ruskin fashion, in red ink? So carefully written a work should not speak of "Keat's" Endymion, and it is doubtful if Miss Yonge's book on Christian names (unless a new edition has been published lately) should be recommended to anyone requiring exact and scholarly work.

Middle English Reader. By O. F. Emerson. cxix.+475 pp. (Macmillan.) 8*s.* net.—This book is a marvel of condensation. Numerous as its pages are, they are as nothing compared with the enormous field of scholarship which has been covered by Mr. Emerson. The extent of his reading and the depth of his knowledge are therefore likely to escape only those who have but a small acquaintance with the subject. Briefly stated, the purpose of the volume is to serve as an introduction to the English language and literature of the period lying between the years 1100 and 1500 A.D. To read the grammatical introduction only is a stiff linguistic task; its thoroughness is remarkable, and it is as clearly put as it is full of sound matter. The book is arranged upon the basis of a single dialect of English at this period, namely, the Midland, though the selections are arranged on a wider plan and comprise most of the great dialectical divisions of the language as spoken at that time. The justification of this arrangement is to be found in the preface to this volume, which in itself makes good reading, and every student of this period will be, we believe, the better for giving diligent heed to Mr. Emerson's view of the preponderant importance of the Midland dialect, as compared both with West Saxon, Southern English, and the dialects of Kent and London. The selections are numerous, and notes are added to each giving such information as is known about the manuscript, date, author, and some account of the work from which each extract is made. The glossary has been prepared also on the basis of the Midland dialect, but all words used in other dialects are included, and cross references are given. It is not a book for beginners; but to the student who has just passed the initiatory stages of literary study in the Middle English period it will prove a treasure.

Verses and Translations. By C. S. Calverley. With an Introduction by Owen Seaman. ix.+184 pp. 2*s.* 6*d.* net.—*The Last Essays of Elia.* By Charles Lamb. With an Introduction by Augustine Birrell. xiv.+296 pp. 2*s.* 6*d.* net. (Blackie's Red Letter Library).—This dainty series is sure to secure an increasing number of admirers. Not only the handsome style of production, but the appreciative

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and altogether excellent introductions and the well-selected and helpful notes are calculated to appeal forcefully to all book-lovers.

The Taming of the Shrew. Macbeth. Both edited by E. K. Chambers. (Blackie's Red Letter Shakespeare.) 1s. 6d. net each.—We have on more than one occasion spoken in high praise of this charming series. It is only necessary to say that the present volumes maintain the reputation of the Red Letter edition.

(1) *Macaulay's Essay on Addison.* By R. F. Winch. xii.+150 pp. 1s. (2) *The Talisman.* By F. Johnson. xvii.+249 pp. 1s. 6d. (3) *Macaulay's Essay on Clive.* By H. M. Buller. xvi.+114 pp. 1s. (4) *The Heroes of Asgard.* By M. R. Ende. xxiii.+120 pp. 1s. 6d. (Macmillan.)—These booklets continue the series of English literature for secondary schools, which Mr. Fowler is editing with all his well-known taste and skill. Three of them represent texts which are already familiar, in a variety of editions and guises, to those engaged in education; but we venture to commend them for their outstanding excellences of presentation in this edition. Scott's novel is, of course, abridged; but Miss Johnson has done her work well, and, apart from this, her introductory matter is thoroughly well worth study. With regard to "The Heroes of Asgard" commendation is also deserved, for the tales of Scandinavian mythology are little known, and the great books of Dr. Wagner and others upon the subject are neither accessible nor suitable for young people. It is a pleasure to praise all of these volumes. The illustrations are excellent.

(1) *Napier's Battles of the Peninsular War.* 128 pp. (2) *The Black Hole of Calcutta and the Siege of Plassy.* 128 pp. (3) *The General History of Virginia.* 128 pp. 6d. each, net. (Blackie.)—Dr. Rouse has made another and a second volume in this series out of Napier's pages, and includes four of that writer's most stirring episodes in it. The second booklet is by Robert Orme, of whom we spoke in a recent notice; and the third by Captain John Smith. This selection of texts is in every way to be praised for its literary excellence and its interesting and stimulating nature.

The Winter's Tale. By T. G. Wright. xx.+140 pp. (Longmans.) 1s.—This is an addition to the "Swan" series, and by virtue of its pictorial no less than its literary excellence it may be commended. The notes have all the merit of brevity, and the examination questions are well arranged.

Gulliver's Travels. By G. Ravenscroft Dennis. xxxii.+305 pp. (Bell.) 2s.—The inclusion of this edition of a world-wide classic in Messrs. Bell's "York Library" series is in every way to be praised, and we hope that some others of Swift's writings will ere long follow, as the "Journal to Stella" has preceded it. The text is the result of a careful collation of all the early editions, and an introduction is supplied by the editor, who gives an account of the various editions through which Swift's manuscripts have passed. Notes are appended, sufficient to enable an ordinary reader to understand the allusions of the text, and among these some geographical notes are of much interest. Altogether a valuable and charming presentation of a wonderful piece of literature.

School Recitations (Junior). Books II., III., IV., V., VI. By Margaret Riach. About 32 pp. each. (Blackie.) 1d. each.—As worthy of every commendation as the foregoing series, upon which we have already complimented Miss Riach. Just the thing for junior scholars.

History.

A History of Modern England. By H. Paul. Vol. IV. vi.+411 pp. (Macmillan.) 8s. 6d. net.—This volume of Mr. Paul's history is, whether owing to the events described or to the author's belief about them, sad reading. The first part tells the story of the years 1876–1880, during which Lord Beaconsfield was Premier. The main subject of English history then was the Eastern Question, and we follow the story of the revolt of Christian races in the Balkan peninsula, the ruthless cruelty with which they were opposed, and the tortuous policy—so Mr. Paul describes it—of the English Cabinet in meeting the difficulty which arose between the necessity of putting an end to the horrors of war and the fear of Russian aggression. Other events of those years—which Mr. Paul calls the "fruits of Imperialism"—were the blundering policy pursued towards Afghanistan and its rulers, and towards the Transvaal and the Zulus. In 1880, owing to the weakness of age and the threat of growing troubles in Ireland, Beaconsfield dissolved Parliament, and the General Election brought in the Liberals, or rather Gladstone. The ex-Liberal leader had made himself indispensable by his Midlothian campaign, and, coming in on a programme which was mainly negative, he presided for six years over a Cabinet which was never unanimous. The greatest triumph of those years was the passing of the Land Act for Ireland, and the greatest disaster was the loss of the Soudan and of Gordon. It seems that Beaconsfield might have had Egypt for Great Britain when he acquired Cyprus, and Mr. Paul thinks all our troubles in that country arose from the refusal to disintegrate Turkey. The features which partly serve to lighten the gloomy picture are the restoration of confidence in Afghanistan by the reversal of Lord Lytton's policy, the extension of the franchise in 1880, and the measures of social reform which Parliament passed under both *régimes*. Of Mr. Paul's style we have nothing new to say. There is the same chronological treatment of events which makes awkward breaks in the narrative, to be cured only by pursuing a subject with the help of the index. There are the keen passing criticisms on men and measures dealt out impartially to all, the same clearness of style which makes the book so useful to those who are just too young to have followed these events with their own eyes. Much the same space is given proportionally to ecclesiastical affairs and to literature, but there is not so much matter to treat as in previous volumes.

The Story of the Town of Reading. By W. M. Childs. xi.+242 pp. (Reading: Long.)—Mr. Childs, principal of the University College at Reading, has been for some time engaged in preparing a history of the town in which he resides. But he has here turned aside from his *magnum opus* to give the benefit of his learning for "the children of Reading," to whom he dedicates this little book. And well has he accomplished his task. There is not much left in Reading, we gather, of the mediæval town, but what there is is constantly referred to, and the young folk will be able, after reading this book, to walk about the streets with a new interest in their surroundings. They will also get a good idea of mediæval England, of the Civil Wars, and of modern industrial progress, by having these subjects linked with the familiar objects of their homes. Would that such books were available for every town!

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The Fighting Man of Japan. By F. J. Norman. xii.+79 pp. (Constable.) 2*s.* 6*d.*—We are somewhat doubtful as to the immediate purpose of this book. It may have been written merely for general instruction in the training and exercises of the Samurai, or it may be meant as a kind of advertisement of the Japanese School of Ju-jitsu which is announced in a preliminary page. Anyhow, the reader will find here a good account of the Japanese methods, written by an old soldier who has been for many years resident in Japan; and the paper is highly glazed for the purpose, we suppose, of helping the many illustrations of ancient and modern Japanese in their athletic exercises which adorn its pages. Schoolmasters should study this subject with a view of adopting some of its best features into our schools.

Selections from the Writings of Lord Macaulay. Edited by G. O. Trevelyan. xi.+475 pp. *Selections from the Writings of J. A. Froude.* Edited by P. S. Allen. vi.+364 pp. (Longmans.) 3*s.* 6*d.* each.—A leaflet accompanying these books quotes a recommendation by the Board of Education to teachers that they should read descriptions from writers like Macaulay and Froude, and the publishers have accordingly provided these two volumes. The editorial work has been confined to selection and the writing of a few notes. It has been well done, and only passages which are beyond criticism have been selected from these two brilliant but unequal writers.

A Descriptive Catalogue of Historical Novels and Tales. By H. C. Bowen. 46 pp. (Stanford.) 2*s.* net.—The title describes the book. The information, which refers to all countries, is tabulated under century and subject, name of the book and author. In this way the teacher can choose those books which illustrate the subject of his class teaching. The catalogue was originally made in 1882, and is now brought up to date.

History of England in Three Parts. Part I., B.C. 55–A.D. 1485. By George Carter. viii.+272 pp. (Relfe.) 2*s.*—Mr. Carter has improved. This latest production from his pen contains few if any errors, and is more up to date than his previous productions. It still retains the hard, summary-like style which gives one the impression that it is intended purely for examination purposes; but under the control, or rather with the assistance, of a good teacher this book can be very useful for such objects.

The "Suggestions" Historical Drawing Cards. By H. W. Donald. Set A. (Charles L. Dible.) 1*s.* 6*d.*—We do not know what drawing-masters will say to these cards, but from the point of view of history we think they are the embodiment of a good idea. The set before us consists of twenty-four illustrating the earlier stages of our island-story, and we can imagine no more delightful change from the usual history lesson than an hour given to copying some of these sketches. Those of our pupils whose eyes do not easily take in details will learn much from such a history-drawing-lesson.

A Student's Note-book of European History, 1789–1815. By J. S. Lindsey. 64 pp. (Heffer.) 2*s.* net. *Salient Points in Modern History*, 1485–1901. By J. S. Lindsey. 24 pp. (Heffer.) 1*s.* *The Student's Guide to British History.* Parts I.–IV. Mediæval. By J. S. Lindsey. 40 pp. (Heffer.) 1*s.*—Mr. Lindsey's books are probably already well known to the readers of The School World. We therefore need not say more about these than that they are of the same character as those previously published. They supply all the guidance that the student can conceivably want, and are specially valuable for examination candidates. Of the three books here mentioned, the first is a new volume on the period of the French Revolution and Napoleon. Besides bibliographies, summary tables of various kinds, and a sketch of the period, it contains sixty-four model answers to typical questions. The second consists mainly of date lists arranged in proportional order, and the third is extracted from the author's larger book on the same subject to serve as a manual to put in the hands of pupils and lecturees. We can recommend them all.

Geography.

An Introduction to Practical Geography. By A. T. Simmons and H. Richardson. 380 pp.; many illustrations and diagrams. (Macmillan.) 3*s.* 6*d.*—This excellent book comes at a psychological moment. The air of the geography class-room is full of "regulations"—the new geography regulations of the Board of Education for secondary schools. These regulations especially prescribe "exercises" as part of any course which is to secure the ultimate approval of the Board's inspectors. Messrs. Simmons and Richardson provide exercises of the right sort, and plenty of them. The exercises lead the experimenter up through his own experiments—*i.e.*, his own experience—to important geographical generalisations. And these generalisations will "stick"; moreover, they will *apply* to other like geographical conditions; they will, in a word, develop out what we believe Dr. Scott Keltie was the first to call "applied geography," but what a more utilitarian spirit designates "commercial geography." Both authors have had much experience themselves in the setting of practical exercises. Their choice is excellent in most instances, though here and there we think they have not erred on the side of leniency. Some of the exercises on map projection and on tidal matters strike us as so hard that we have no doubt many teachers will be glad to follow the advice in the preface (on some of the meteorological statistics), and regard them "as stores to draw upon as occasion presents itself, and not as compulsory exercises to be worked by all classes." The following is the "scheme" of the book, which by no means consists of exercises only. Descriptive and explanatory matter in most cases is added. There are four sections:—No. i. deals with *Maps*, under such headings as Scales and Distances, Direction, Ordnance Maps, Hachures and Contours, Map-making; No. ii. with *The Globe*, comprising the elementary facts of "mathematical" geography, Latitude and Longitude, Time, Day and Night, the Seasons, &c.; No. iii. with *Climate*; and No. iv. with *Land and Sea*, more particularly as the abode of man and his belongings. There are in addition plenty of diagrams and illustrations and pictures; the latter, as the book only measures seven by five inches, are rather small, but they are sufficiently illustrative for the purpose. There is a good index, and, what we are particularly glad to note, the promise of a future "key" for teachers.

Historical and Modern Atlas of the British Empire. By C. Grant Robertson and J. G. Bartholomew, F.R.G.S. 64 plates. (Methuen.) 4*s.* 6*d.* net.—This should really be a most excellent *vade mecum* for the students for whom, the authors claim, their atlas has been specially prepared. Throughout the work the inter-relation of geography and history is constantly insisted upon. The selection of maps is most interesting; their execution unimpeachable. We direct special attention to the following:—the countries of the British Empire drawn on two scales, (*a*) area, (*b*) population (Plate I.), where the contrast is striking; the economic maps inserted liberally as explanatory of

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much anterior and posterior "history"; the Russian advance on Central Asia, admirably indicated by line upon line of red dates; the contrasts of the "Far East" in 1803 and 1905, and of the African continent at different epochs. To make this collection of maps more instructive than even they are *per se*, the authors have inserted short chronological summaries in many of them, a short gazetteer of Imperial countries and possessions, a note on political losses and most recent changes, a few statistical tables, and, above all, a most valuable, because succinct, introduction on the relation of geography and history. All teachers of geography, in default of purchasing, should beg, borrow, or steal this excellent object-lesson of how closely interwoven are the two subjects.

Science and Technology.

A Three Years' Course of Practical Chemistry. By George H. Martin and Ellis Jones, with an introduction by Prof. J. B. Cohen. First year. viii.+63 pp. 1*s.* 6*d.* Second year. viii.+51 pp. 1*s.* 6*d.* (Rivingtons.)—The aim of the authors has been to provide a three years' progressive course based entirely on the practical work of the boys. The book is divided into three parts, the simple chemical processes, followed by researches on air and water and substances in daily use, being considered in the "first year." The second year is devoted to the study of the reacting weight of elements and compounds as forming an introduction to the laws of chemical combination and the use of equations. The student is told what to do at the head of each page, and expected to enter his observations and conclusions underneath. The authors properly lay stress on the importance of encouraging the pupil to draw his own conclusions at every step, though Prof. Cohen, in a short introduction, writes of "that depressing system of intelligent inquiry now known as the heuristic." We cannot but help feeling that the use of such a book as this would have mainly the effect of saving the teacher by enabling him to let the text-book do his work. The average boy with such a book in his hands would rush to fill in his page and turn to the next without ever stopping to consider properly the meaning and bearing of each step of his work; he receives no proper incentive to devise experiments for himself or think for himself. Moreover, the practice of entering notes in printed books, though it may be provocative of neatness, has a deleterious effect on the training of the boy to write intelligent accounts of what he is doing, which is one of the main objects of elementary science teaching and such a valuable asset in later life.

Exercises in Quantitative Chemistry. By Harmon Northrop Morse. xx.+556 pp. (Ginn.) 8*s.* 6*d.*—Prof. Morse's book has been written, first, with the object of placing in the student's hands a working guide, sufficiently precise to enable him to work alone, and, secondly, to increase the efficiency of the teacher by saving him waste of time and effort in repairing grosser mistakes. At the same time the book is not intended as a complete guide, and much has been left for the teacher. In selecting exercises, the author's aim has been to enable the student to acquire a skill in quantitative manipulation and a knowledge of methods which will make it possible for him subsequently to become easily proficient in any of the several lines of quantitative analytical chemistry. Nowadays, when the time devoted to training in proper quantitative chemistry is so much shorter than formerly, there is a great danger of the student doing little more than learn a certain number of methods of analysis, and not paying that full attention to even the minutest details, and acquiring that real sense of working quantitatively, which are the key to success. The importance of this is often not fully brought to the front in analytical text-books; Prof. Morse, however, does not fall under this error, and we should have no hesitation in placing full confidence in an advanced student who had conscientiously worked through this book. The opening chapters are devoted to the preparation of the instruments used, and deal with the balance, the barometer and thermometer, calibration of eudiometers and other apparatus, the measurement of gases and liquids, the determination of specific gravity and molecular weights. They contain a great deal of very valuable information clearly and concisely put. Subsequent chapters contain the analytical work proper, including the estimation of the halogens, sulphur, nitrogen, phosphoric acid, silicates, and carbonates, every attention being paid to accuracy of method. Other chapters describe analyses of a more technical nature, such as the determination of carbon in iron and steel, gas analysis, and butter analysis. The application of electricity in chemical analysis is exemplified by a chapter on the electrolytic determination of metals, whilst an account is also given of certain new electrical heating appliances for laboratory use and of a new electrical method for the combustion of organic compounds.

First Steps in Quantitative Analysis. By J. C. Gregory. vi.+136 pp. (Edward Arnold.) 2*s.* 6*d.*—This book is intended to provide a grounding in the fundamental principles of quantitative analysis. The first chapter deals with the estimation of the halogens and silver, including the preparation and standardisation of solutions for volumetric analysis and the description of a number of minor precautions to be observed. Subsequently the gravimetric estimation of the halogens and of silver as silver halide is described. In a second chapter alkalimetry and acidimetry are investigated, subsections being devoted to the use of indicators, preparation of pure sodium carbonate, and to the standardisation of sulphuric acid, sodium hydroxide, baryta and similar solutions and their uses. The third chapter deals with the use of standard potassium permanganate and potassium dichromate and the gravimetric estimation of iron; whilst chapter iv. deals with the preparation and use of standard solutions of iodine, sodium thiosulphate, and arsenious oxide. Finally, a few pages are devoted to general considerations; these might well have been placed earlier, as it is, for example, somewhat late in the day to learn that "if substances are not quite dry when they are weighed, error will be introduced." The book seems well adapted for advanced work in schools and for students working alone, though it is rather too diffuse in parts for the needs of students following practical courses under the guidance of a teacher. It is, however, full of practical points, and should be very useful to science teachers in schools.

Elements of Quantitative Analysis. By Dr. G. H. Bailey. x.+246 pp. (Macmillan.) 4*s.* 6*d.*—This book is of a more ambitious nature than most analytical text-books, and the author is to be congratulated on having put together in such a narrow compass so much useful matter. It should prove very suitable for use in college laboratories. The method of treatment adopted aims at cultivating manipulative skill, experience in selecting suitable methods, and judgment in minimising sources of error—all tending to cultivate resourcefulness and fitting the student to cope with the problems he will subsequently meet with in works' practice. In the earlier chapters the preparation and analysis of certain well-defined compounds are described, and a preliminary training in manipulation provided.

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Subsequently the methods of volumetric and gas analysis are dealt with, followed by the consideration of methods applicable to the analysis of minerals. Part IV. is devoted to technical analysis, and contains sections dealing with the examination of water, fuel, materials used in the alkali industry, fertilising agents and soaps. It might with advantage have been extended to include a few simple tests for carbohydrates, &c., in food stuffs. A very valuable feature, and one not usually met with in a work of this size, are the notes in the appendix giving directions for the testing of reagents. The text is clearly printed and, so far as we have examined it, free from error.

Mounted Reptiles, Birds, and other Animals, for Object and Nature Study Lessons. (Thurston: 673, Romford Road, E.) 3*s.* 3*d.* to 11*s.*—The specimens submitted to us for examination by Messrs. J. R. Thurston and Co. include the hedgehog, weasel, kingfisher, lark, swallow, and tree-sparrow. They are all mounted in excellent style, and all have a life-like appearance. The prices are very moderate, especially in view of the satisfactory workmanship. The price-list, which accompanies the specimens, shows that this firm has available for immediate distribution a varied selection of birds and small mammals which should prove of great value to teachers of natural history. Where it is difficult to procure living animals for class demonstrations, or where with the live animal it is—as in the case of the hedgehog—troublesome to examine the external characteristics, these specimens will prove of great service. Schoolmasters and schoolmistresses responsible for school museums would do well to acquaint themselves with the stock of Messrs. Thurston and Co.

Elementary Physics (Practical and Theoretical). Third Year's Course. By John N. Brown. 111 pp. (Blackie.) 2*s.*—This book is intended to supply a third year's school course in experimental physics. The subject-matter includes experiments on the laws of motion, energy transformation, densities of solids and liquids, hydrostatic pressure, expansion of gases, solids, and liquids, change of state, calorimetry, hygrometry, and periodic motion. A number of simple problems is given at the end of each chapter. The experiments are clearly and simply described, and the necessary apparatus is fairly simple. The volume can be recommended for the use of students who require a short advanced course in experimental physics.

A Guide to the Electrical Examinations. By F. H. Taylor. 118 pp. (Marshall.) 1*s.* net (paper), 1*s.* 6*d.* net (cloth).—This work is primarily intended to be a book of reference for students who are studying electrical engineering or electrical science with a view of taking the examinations of the City and Guilds of London Institute or those of the Board of Education. In the first part of the volume all necessary details, including the regulations and syllabuses of these examinations, are given. The larger half of the volume is utilised in giving specimen answers to selected questions set in recent examinations. This portion of the work is scarcely satisfactory, since several of the answers, if given by examination-candidates, would fare badly at the hands of the examiner; thus, we read the following:—

Q. *A dip needle in England is loaded so that when disturbed it oscillates about a horizontal position. How will it behave when taken to the equator if the load is not altered?*

Ans. As the needle oscillates about a horizontal position, it proves that the load on the needle is exactly equal and opposite to the "inclination" or "magnetic dip" at the place where it was used. When moved to the magnetic equator, at which point there would be no "inclination" or "magnetic dip," the needle would, owing to its load and under the action of gravity, take up a vertical position.

Miscellaneous.

(1) *The Schoolmaster's Year-book and Directory*, 1906. lxv.+456+562 pp. (Sonnenschein.) 6*s.* net. (2) *The Oxford Year-book and Directory*, 1906. 764+xix. pp. (Sonnenschein.) 5*s.* net. (3) *The Cambridge Year-book and Directory.* 784+xv. pp. (Sonnenschein.) 5*s.* net. (4) *The Public Schools Year-book*, 1906. lxiv.+675 pp. (Sonnenschein.) 2*s.* 6*d.* net.—(1) Unfortunately, our copy of the present issue of this invaluable annual came to hand too late to be noticed in our February number. The editor has already placed us under many debts of gratitude for the excellently arranged information he has placed at our disposal in this scholastic "Who's Who," and we hope that it will become increasingly popular in all schools. It is remarkably up-to-date, and provides everything worth knowing about the educational events with which it deals. (2) and (3) This issue of a convenient directory has been brought up to date by the addition of many names of those who have recently graduated, the records of many other graduates of longer standing are dealt with for the first time, and fuller information concerning others has been added. This publication should prove a success. (4) There are several new features introduced this year in what is now a widely-known book of reference. Great prominence is given in Part III., entitled "Military Efficiency in Public Schools," to an inquiry made by the editors of the annual. Six questions drawn up by Lord Roberts were forwarded to the headmasters of the schools included last year in the year-book, and the answers are here tabulated, classified, and commented upon.

The Law of International Copyright, with Special Sections on the Colonies and the United States of America. By Dr. William Briggs. xx.+850 pp. (Stevens and Haynes.) 16*s.*—So many schoolmasters nowadays write books that an authoritative treatise dealing with the law relating to literary property will appeal to a large number of our readers. Dr. Briggs considers his subject of international copyright first from the historical point of view, and afterwards discusses the question on theoretical grounds. The third section of the work is chiefly taken up with the conclusions arrived at by the Berne Convention, while two other parts explaining international copyright in the British dominions and the protection of foreign authors in the United States respectively, together with numerous valuable appendices, conclude an exhaustive treatment of a very important subject. The book represents a large amount of research and the exercise of untold patience, and Dr. Briggs is to be congratulated upon what he fairly describes in his preface as "the first work in English on the Law of International Copyright."

The Writers' and Artists' Year-book, 1906. vii.+79 pp. (Black.) 1*s.* net.—This excellent guide to the character of most of the periodicals in this country should prove of real assistance to teachers who indulge in literary pursuits in their leisure hours.

Practical Lessons in Singing and Voice Production. By A. E. White (Singapore). 1–24 pp. (Murby.) 1*s.* net.—This booklet is the work of an enthusiast, and the usual rules are given clearly. Perhaps in a second edition the

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author would give (no authors ever do) a clear and full account of her own difficulties and how she overcame them. More stress should be laid, too, on the length of the road towards good speaking or singing.

The Fairies' Jest and other Plays. By A. H. Langdon. Music by C. Hartog. 1–109 pp. (Sherrat and Hughes.) 3s. 6d. net.—Ambitious, no doubt, but excellent in execution, and quite within the compass of a school or a well-to-do family. The plays give the child (a born actor) a chance, and the music is simple and suitable. The work is, however, much nearer literature than such ventures usually are. Some of the verses and speeches are excellent, and there is a restraint over the whole. A good teacher would make a great deal of such a book.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Method of Teaching the Atomic Theory.

MR. W. A. WHITTON'S letter in the December, 1905, number of THE SCHOOL WORLD raises an important and interesting question. No one is, of course, entitled to claim that he has found *the* solution of the problem of teaching the atomic theory, but the following account of an attempt at its solution may prove suggestive and may serve the still more useful purpose of provoking that conflict of opinion from which well-founded convictions eventually emerge.

The writings of Mach and (in England) of Prof. Karl Pearson have secured wide acceptance for the view that the function of the concepts of science is not to represent supposed "realities behind the veil of sensible phenomena," but to render possible concise and serviceable *descriptions* of the phenomena themselves. In the present case, for example, the terms "atom" and "molecule" represent, not *discoveries* of chemists, but rather *inventions* by the aid of which the actual observed course of events can be "economically described." Assuming the correctness of this view, teachers seem compelled to accept the practical corollary that it is illegitimate to introduce the conceptions in question until their students have accumulated a mass of first-hand observations sufficiently large and sufficiently concordant to make "economical description" at once desirable and possible.

The special object of this letter is to urge the further corollary that the terms "atom" and "molecule" may be introduced legitimately as instruments for the description of facts established in the laboratory long before the range of these facts is so wide as to demand for their resumption the conceptions of atom and molecule presented in the customary definitions. It is suggested, that is, that our descriptive instruments should be modified as the facts upon which they are to operate become more varied in character, the form of the conceptions given in the text-books marking merely the direction which this process of development should take.

To be convinced of the soundness of this practice, it seems sufficient to note that it imitates the process by which, in nearly every case, the conceptions of science have reached the forms that characterise them at the present day. The atom and the molecule received from the followers of Dalton and Avogadro *mass* determinations only, but as facts accumulated they assumed *geometrical* determinations also, so that, finally, the "carbon tetrahedron" and "stereo-isomerism" became part of the accepted descriptive apparatus of the expositor. Similarly, we have quite recently seen developments in the conception of the internal structure of the atom which have attracted too much attention to need more than a passing allusion. The teacher who rejects the anticipatory use of the terms atom and molecule, which I am recommending, might well be challenged to state the principle upon which he selects any particular stage in such a process of evolution as the correct conception which *ought* to be taught in our schools. If he replied that the conception of the atom which regards it as the smallest particle of an element that enters into chemical combination is all that is necessary to account for the facts of elementary chemistry, and is therefore the definition to be adopted, I should claim that his contention is, properly, indistinguishable from my own, and should invite him to show his consistency by admitting at a stage in the accumulation of facts earlier than that represented by the elementary text-book a still less developed conception of the atom.

A brief illustration of the application of this argument may be useful. Our students are beginning their second year's work with a repetition of some of the investigations that they have already carried out—partly for the sake of revision, but chiefly for the purpose of studying quantitative relations where hitherto only qualitative observations have been made. The behaviour of water and the common acids with the metals, and the relations of the oxides of lead, are among the matters which thus come up for reconsideration. In our endeavour to express as concisely as possible the facts which come to light, we gradually evolve an algebra which, besides serving this purpose, proves to be fertile in suggestions for further investigation. Thus when steam is passed over hot magnesium the crude formula which describes the reaction in the form

$$\text{steam} + \text{magnesium} = \text{magnesium oxide} + \text{hydrogen}$$

may pretty obviously be improved into

$$HO + Mg = MgO + H,$$

with a manifest gain in "economy of statement"; while at the same time such a mode of shorthand representation suggests the definite problem of analysing other chemical events into transactions between a limited number of "elements" regarded as present throughout.

When we turn to the action of sodium upon water, it is natural to suppose that the analogous algebraic expression

$$HO + Na = NaO + H$$

will represent the facts. But, if so, caustic soda should be an oxide. Thus a fresh investigation is suggested, with the object of testing the value of this hypothesis; and, contrary to expectation, caustic soda, when heated with zinc-filings, is found to yield hydrogen. It appears, then, that the hydrogen contained in water can be thought of as replaceable in two instalments, a result which we determine to express by the form

$$H_2O + Na = NaOH + H,$$

while for the mere sake of consistency we admit the propriety of amending our first "equation" into the form

$$H_2O + Mg = MgO + H_2.$$

At this point the recollection that in the electrolysis of water two volumes of hydrogen appeared for each volume of oxygen suggests a further investigation undertaken to determine whether the two successively displaceable instalments of hydrogen are equal in quantity. Without much difficulty satisfactory experimental evidence that this is the case is obtained. This result reacts upon the

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meaning attached to our symbols. They can be thought of as possessing quantitative as well as qualitative significance, such a symbol as H_2 being employed to represent a quantity twice as great as that represented in the same equation by the symbol H. When we have accumulated a few more results of the same character, it becomes "economical" to elaborate a special terminology to deal with them. The term "molecule" is assigned to the "small mass" of substance under examination—for example, to the heap of lead peroxide in our combustion tube. The two equal "instalments" of oxygen which can be removed successively by heat and reduction are just as appropriately called "atoms." The results of our investigation of lead peroxide can then be summarised concisely in the statement that a molecule of it contains two atoms of oxygen and (apparently) one of lead.

The future development of the method will now be clear. The quantitative character of the conceptions of the molecule and the atom will undergo important developments (1) when it is found that the quantitative relations between the weights of the atoms of two elements in one reaction also characterise them when they enter into another reaction, so that, for example, the "atom" of oxygen and the "molecule" of water may economically be thought of as consisting of invariable relative quantities of these substances whenever the terms are used; (2) when, following up the observation we made in the course of our investigation of water, we find that the molecule of every gas—taking the term in the universalised sense just explained—occupies the same volume under standard conditions of temperature and pressure.

The teacher who shares Ostwald's dislike of hypotheses will stop here. He will hold that the conceptions of atom and molecule now reached are sufficient to perform the only task that we have a right to expect of them—the "economical description" of the facts that have been established. For the strengthening of his faith such a teacher may be referred to Duhem's "Le Mixte et la Combinaison chimique" and Prof. Divers's address to the Chemical Section of the British Association in 1902, which are both full of interesting criticisms invaluably suggestive to the practical teacher.

If, on the other hand, he is loth to abandon a metaphysical conception that dates from the beginnings of Greek culture, he has to add only one more determination to our conceptions of atom and molecule. The most natural way to approach this final elaboration is, perhaps, to show from physical considerations the plausibility of the supposition that equal volumes of all gases under the same conditions contain an equal number of ultimate parts, and to restrict the name "molecule" henceforward to those parts.

T. Percy Nunn.

Cricklewood, N.W.

Parallel Straight Lines.

Mr. Godfrey's letter on the above subject in your January number distinctly implies that proofs of the necessary theorems, from the direction definition of parallels, cannot be both rigorous and simple enough for the average schoolboy's understanding. In the interests of progress, such a suggestion should not be allowed to pass unchallenged. If the definition of direction is sufficient, the theorems are both simply and rigorously proved. The method which I have adopted is to define both *same* and *different* direction of two lines as follows:—

"Straight lines in a plane have the same or different directions according as they make with any third line whatever (which they meet) equal or unequal angles towards the same parts."

For a pair of straight lines to have simultaneously the same and different directions is a contradiction in terms; the definition is therefore equivalent to a statement that pairs of co-planar lines are divisible into two classes:—

(1) Those which make equal angles towards the same parts with every third line they meet—parallels.

(2) Those which make unequal angles, &c.—non-parallels.

Quite young boys can grasp this distinction as soon as they can use a protractor properly. The advantages of the definition are:—

(1) The definition is complete; Euclid's requires a postulate to bolster it up.

(2) The definition gives the positive property most frequently used, instead of a negative property. The latter is useless until the former has been derived from it.

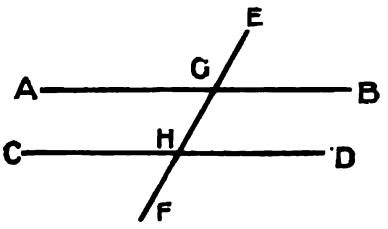
(3) The set-square method of drawing parallels is derived immediately from the definition, so that practice with parallels (*e.g.* division of lines into equal parts) can be gained before the theory is attacked.

(4) The distinction between parallels and non-parallels can be treated practically without any knowledge of the theory. It is impossible to verify Euclid's or Playfair's postulate directly. The difference of the two definitions in this respect is at once seen from the following example:—

Draw a vertical line 2″ long near the left of the paper, a horizontal line at one end, and a line at an (interior) angle of 88° at the other. These do not meet for a distance of nearly 60 inches; but any line crossing them will show an appreciable difference of angles (2°) towards the same parts.

(5) The proof that parallel lines do not meet in general, which follows at once from the definition, gives the additional most useful property: "Two parallels through a common point coincide." With Euclid's definition parallels cannot coincide.

The proofs of Euclid I. 27–29 are simplicity itself.



(1) If alternate angles are equal, then angle GHD = alternate angle AGH = opposite angle EGB, *i.e.* angle $GHD = EGB$, same parts; $\therefore AB \parallel CD$.

(2) If $AB \parallel CD$, then angle $GHD = EGB$, same parts, = opposite angle AGH, *i.e.* angle GHD = alternate angle AGH.

The opinion of teachers who have used the direction definition is unanimous in its favour. For rigorous treatment it is only necessary to make the original definition sufficient, as suggested above.

The one difficulty is the proof that non-parallel lines meet. (Required first for the construction of circumcircle of a triangle.) I have given a simple proof depending only on I. 5—(2) above—and the assumption that the parts of a continually bisected angle may be made less than any finite angle (Archimedes's axiom of magnitude). It is not so difficult for boys to understand this as for them to grasp the necessity for Euclid's or Playfair's postulate.

I quite agree with Mr. Godfrey that proofs with the direction definition may be unsatisfactory. The rotation

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proof of I. 32 is a case in point. This cannot be made rigorous without (1) (2) above, and with these the ordinary proof is very much the simpler and more instructive. Without these the same method makes the sum of angles of a spherical triangle equal to two right angles, and must therefore be illogical. It is, in fact, difficult to make the proofs of fundamental rotation theorems as applied to angles both simple and rigorous: and rotation as a geometrical method only becomes really useful after a good knowledge of congruent and similar figures has been gained.

In this connection, it is unfortunate that the Cambridge Syllabus should encourage the use of rotation by giving as a proposition: "The sum of exterior angles of a polygon is 4 right angles," a property which is never required, and is not always true; instead of "The sum of angles of an n-agon is $2n-4$ right angles," which is always required and is always true.

Perhaps I ought to mention a further difficulty which occurs when solid geometry is attacked, viz. the definition of parallel planes. I have in this case defined them as perpendicular to the same line (one line is sufficient). The usual theorems follow quite simply and easily.

Macclesfield. E. BUDDEN.

THE definition of "direction" which Mr. Budden offers will be found to contain a latent theorem. This is as follows:—

"If two straight lines make equal angles (towards the same parts) with *a certain* transversal, then they make equal angles with *any* transversal."

Anyone who endeavours to prove this theorem will find that it depends on Euclid I. 32, and thus, ultimately, on some form of the axiom of parallels.

Every system of geometry that in any way resembles Euclid's involves, in some form or other, the axiom of parallels. This was proved, once for all, when Lobatchewsky worked out a system of geometry based on Euclid's axioms *minus* the axiom of parallels. The main features of this system were:—angles of a triangle less than two right angles, non-existence of similar figures, finite area of a triangle the three vertices of which are at infinity, existence of real circles with imaginary centres, &c.

Not one schoolboy in ten thousand will ever hear the name of Lobatchewsky; but no system of Euclidean geometry that ignores the parallel axiom can be called perfectly sound.

It *may* be sound enough for the purpose of school-teaching; but this is a pedagogical, not a mathematical question; and doubtless there are many axioms that even Euclid assumes without statement.

Osborne. C. GODFREY.

Poetry and Music in Secondary Schools.

WE are living in an age when the aim of education is to train boys and girls with a view to the practical needs of life, and one is almost inclined to fear lest the chemical laboratory, the workshop, and the general investigation into, and the working up of, the substances of things material should drive away from our minds the cultivation of the Arts. At the outset, we should like to ask whether more attention could not be given to the proper study of poetry and music.

The reading of English literature in schools is generally carried on with a view to an examination, and while the questions of the examiner, though often dealing with points which exclusively belong to the province of English grammar, serve a useful purpose, yet this constant reminder of the examination behind so much of the study done by boys tends to the undertaking of such work less for Art's sake and more for the examiner's.

As regards music in day-schools, in spite of the oft-quoted statement that nearly all boys can be taught to sing, not much good comes from singing which is taught indiscriminately to whole classes of boys, who are grouped together not for musical ability, but for their proficiency in ordinary school subjects.

The presence in a class of thirty or forty of two or three boys who have little idea of producing a musical note, or with only a slight interest for music, serves to demoralise the whole class, and should therefore be avoided. Singing classes should be so arranged that the attendance of the boys at them is optional. So far as learning to play a musical instrument is concerned, unfortunately the amount of practice required to obtain anything like proficiency generally discourages the average boy, who likes to devote a good deal of his time to cricket and football, and grudges the hours spent in practising alone on the piano or violin. In boarding-schools, where it is nearly always the rule to have a voluntary choral society, singing is carried on in a truer spirit, and in a way more productive of good results.

If dramatic poetry were studied with the object of being acted on the stage rather than with a view to the examination; if lyrical poetry were associated more with musical settings—the kind of music, perhaps, that Sir Hubert Parry has lately written for some of the gems in English lyrical poetry—what an incentive towards a true appreciation of all that is best in literature would be given! The fact is, there is at the present day in many schools a neglect of learning by heart specimens from the great writers in English prose and poetry, a fact which contributes largely to the general failure of boys to express their thoughts in grammatical, to say nothing of good classical, English. What is the reason for this apparent indifference to making boys thoroughly familiar with the best writings of great authors, when it is generally admitted that good essays cannot come from a mind which is not furnished with a proper store of the ideas of great writers clothed in their own perfect language?

Practice appeals to the active mind of boys sooner than theory, and studies of the men and events of past ages are made more real and interesting when compared or contrasted with those of the present; so, if the plays of Shakespeare or portions of a play were systematically put on the school stage, as great an interest would be aroused in the actors and audience as would be found among boys who could be taught to play on stringed instruments an easy symphony, or some incidental music composed for a dramatic representation, or to sing a four-part setting of some of our beautiful English lyrics.

This combination of dramatic and lyrical poetry with the stage and musical instruments is just what is most needed, for it brings, as it were, the past into touch with the present, and turns ideas into realities, two things which we have said appeal to boys' minds. We should like to know that every school has its dramatic, its choral, and its orchestral society, which should all work together for the common aim of school entertainments, and nothing but selections from the best works in prose and poetry should be tolerated on such a stage. Thus their more intimate acquaintance with English literature would improve the essay-writing of boys, the acting of plays would make their reading aloud more intelligent and distinct, and they would be brought more under the refining influence of good music.

Aske's School, S.E. C. A. F. GREEN.

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Work before Breakfast.

In your January number, Dr. Clement Dukes wrote condemning work in schools before the scholars had breakfasted, on the ground that the vital powers of children become greatly depressed after long abstention from food. This no doubt is true, and applies to young people of all classes in the community.

But if it applies to the well-fed at a certain time in the twenty-four hours of each day, how much more must it apply to the underfed children of our large towns, to whom the before-breakfast period may extend through the morning session of a "provided school"? To press information upon a child with a starved stomach is not only useless, it is harmful, as it injures the brain and deprives the child of power to acquire knowledge when it may have reached improved circumstances.

It seems to me that schools that take underfed children should be reported upon periodically by the medical officer of health, and the children unfit for the curriculum removed to a separate school where feeding was the preliminary to instruction. The lessons for these children would well be replaced by rest, and the mental condition recreated by a story-book.

This was the plan adopted in the school started by Deacon Abraham in the Armenian famine, for the children suffering therefrom in 1882. A few months of this gentle hospital treatment now would probably save the children from years of suffering in after life. Certain physicians are said to have lately reported that short hours of sleep are a definite cause of intellectual inefficiency. Is not semi-starvation also a cause as potent to produce intellectual inefficiency?

H. de Noailles.

Military Training in Schools.

As a constant reader of The School World, though merely an amateur educationist, I venture, greatly daring, to enter the lists against "H. G. A." I hope he will not take it ill when I say he has plainly lost his head in his hot haste to demolish Lord Roberts. I am not going to deny that Lord Roberts, in his professional enthusiasm, may also have been carried into the regions of idealism. But I would like, sir, with your leave, to say a few words as a true lover of peace, and as one who has had, in his own family, the terrible, though not, thank God, the fatal, experience of the horrors of war.

In discussing this subject, let us assume two propositions as settled: first, that in these days of compulsory *mental* training a corresponding compulsory *physical* education is absolutely essential for health. I am on my own ground here; and, as a physician of nearly fifty years' experience in his profession, I do not think anyone can deny the truth of this assertion. Secondly, it is, I take it, equally true that the country *must* improve its means of defence. To obtain the power of protecting ourselves sufficiently, and yet economically, we need a comparatively small, but thoroughly efficient, army of professional soldiers, and an ample reservoir of men so far trained that they may, at the moment of danger, be able to take, with or without much further drilling, their place in the fields of war. So much being taken for granted, I ask: What is the best means for these ends? and unhesitatingly answer: Cadet corps in our secondary, and shooting and drill by means of evening continuation classes, from the age of fourteen to eighteen, in our State-aided elementary schools.

Political or apparently Fiscal Objections.—I do not think it is necessary to argue "H. G. A.'s" point, because it is so plain that of all projects for national defence this is absolutely the cheapest in its probable demands on the public purse.

Moral Objections.—Here "H. G. A." is absolutely contradictory. He does not object to Militia and Volunteers, but he is against teaching our children to be soldiers at school. As if, forsooth! every boy worth the name were not at heart a soldier as soon as he begins to cheep.

As a nation we should grow up all for wars and fighting. Are the Swiss, as a nation, warriors in this sense? On the contrary; have they not over and over again shown themselves ready to sacrifice their prestige—I had almost said their independence—for the sake of peace? What of our Colonies and their appreciation of military training? Do they want to fight without reason? Would they not be the first to suffer in a continental war, and do they not know it well?

Soldiering would discourage the Entente Cordiale. And what of the reception our soldiers got lately in France, Germany, and America? Were they not the representatives of English power and English fighting resources, and still welcomed as comrades?

All this is, however, not the real question which vexes "H. G. A." Physical training is abhorrent to him and others, because the very idea upsets their conservative notions and disarranges their time-tables. But the nation is at last roused to its supreme danger, and the schoolmaster must wake up and not stand in the way any longer, but give the best help he can to his parliamentary masters, and to *their* masters—the public at large.

Dingwall, N.B. W. B.

Bookkeeping as a School Subject.

The contribution in your last issue on "Bookkeeping as a School Subject" is very opportune. Mr. Thornton shows that the subject possesses value as a factor in mental development, and therefore has some claim to a place in the school time-table. The Board of Education, however, in a recent letter states that it does not consider it a suitable subject for a secondary school. It would be instructive to have the views of your readers on this question.

J. Stott.

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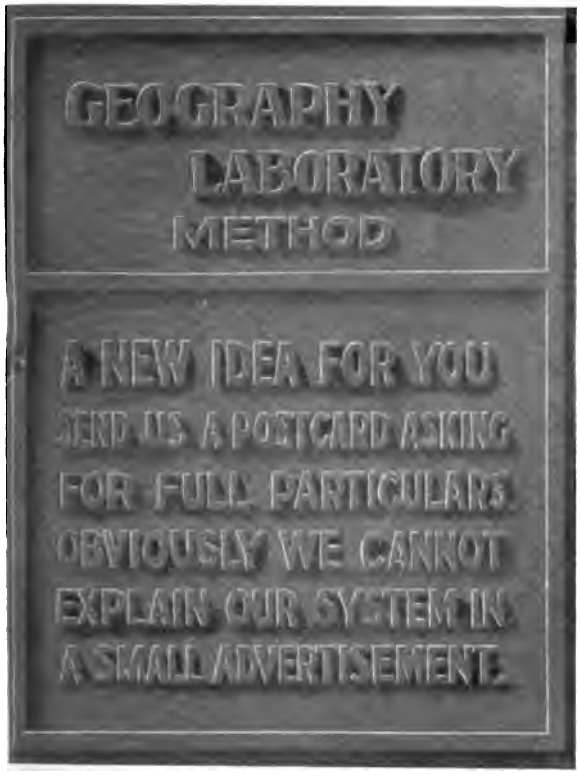

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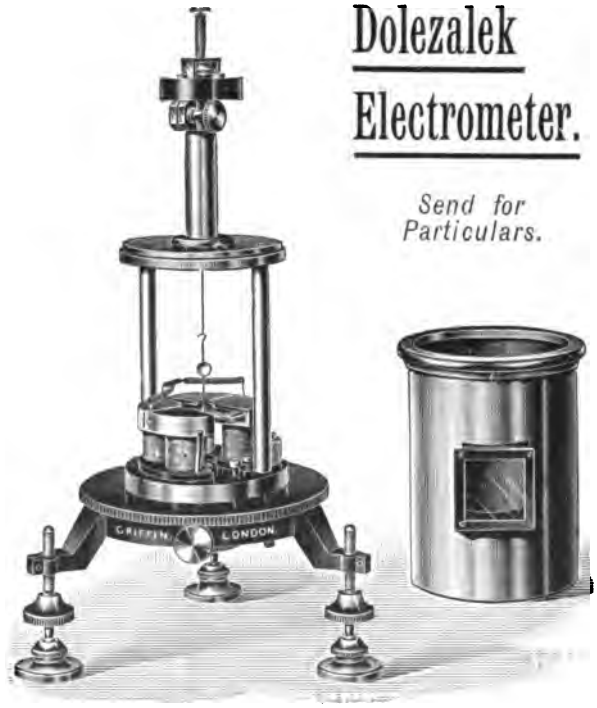

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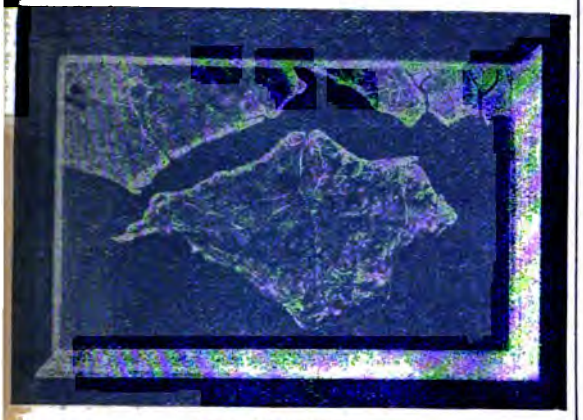

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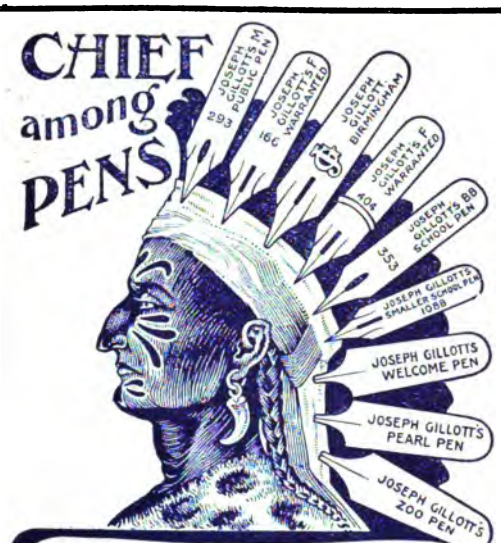
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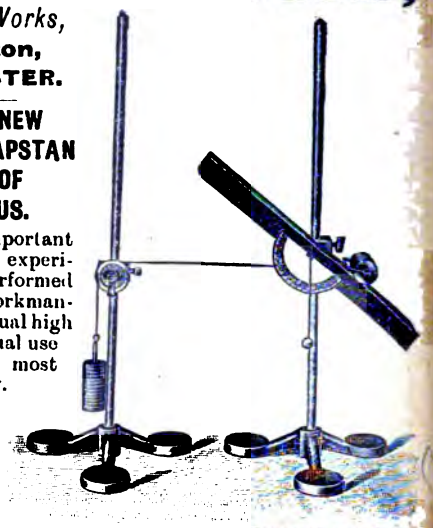

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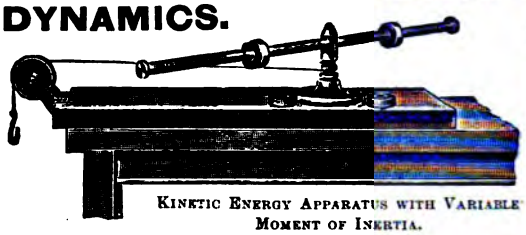

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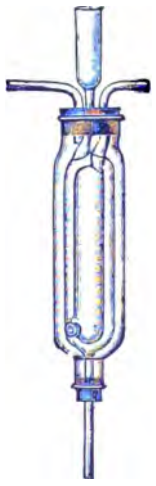

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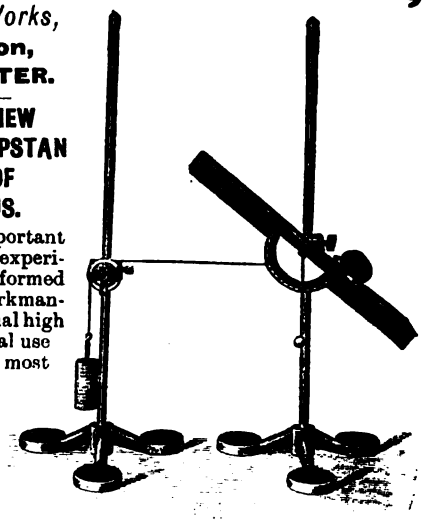

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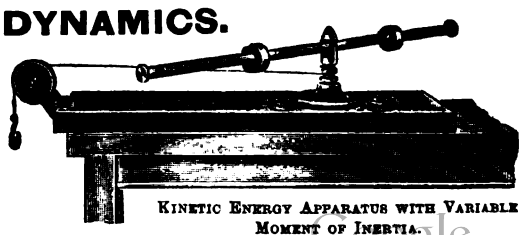

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To face first matter.

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The School World

A Monthly Magazine of Educational Work and Progress.

SIXPENCE.

ADDENDUM.

The article on "Equipment for Drill and Shooting in Schools" is by Mr. C. M. STUART, M.A., Headmaster of St. Dunstan's College, Catford, S.E.

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already been adopted in several schools with excellent results, viz., that every boy while at school should be taught to drill and to shoot.

We do not mean to imply that the universal adoption of this measure will settle for ever the question of Army reform, or even of universal service; we do not think that schoolboys, or even members of rifle clubs, lying with rifles behind hedges, can protect England against the invader; but what we do anticipate is this: that every Englishman shall have learnt so much of his drill and of the use of his rifle at school, that when the time does come for him to serve as a soldier (whether he does so voluntarily or under compulsion does not much matter), he will make not only a better soldier, but he will become "kampffähig" in half the time, and with half the trouble and expense both to himself and others, which he would otherwise require. The same argument applies to rifle clubs. It has been mockingly suggested in many papers and, I believe, even in the House of Commons, that if members of rifle clubs, as such, were to take the field against an enemy, they would be liable to be hanged on the nearest tree. Of course they would, and quite right too. What the rifle clubs

forms. It is indeed surprising how wedded scholastic and other authorities have become to the idea that uniform is necessary for the military instruction of schoolboys. I note in THE SCHOOL WORLD for last February the following (H. G. A.'s letter, p. 80):—"The stimulus of a uniform, which one headmaster, speaking after Lord Roberts, said was attractive to every healthy-minded man, would be found essential, or be thought to be essential." This is a great mistake, and it has given H. G. A. the opportunity of placing difficulties in the way of military training. Again and again, in public and in private, I have had opportunity to combat the idea, "no military training without uniform," and many schools who are really unable to support a uniformed corps have attempted to do so, and found that they have undertaken too large an order.

When, in 1900, we at St. Dunstan's College began teaching all boys to shoot and to drill as a battalion 300 strong, one of our rivals in cricket and football started a cadet corps. We challenged them to a shooting-match, and that challenge, often repeated, has never yet been accepted. At length the headmaster was pressed to give his reasons for declining the challenge, and we

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received the reply, "We have spent all our money on uniforms, and cannot afford ammunition."

The advantages of non-uniform are as follows:—First, the question of expense; and this not only facilitates training for those who cannot really afford it, but cuts the ground from under those parents who, while their real reason is indulgence to the wishes of the boy, would make the expense an excuse for withdrawing him from military training. The conscientious objectors, the parents of the poor boys who have no appetite (? tuckshop), do not withdraw their sons from drill in mufti, but would not pay for uniform if it cost half-a-crown. In short, drill without uniform can be made compulsory for all; with uniform it must be voluntary, and fails to include those boys to whom it would be of the greatest advantage. I think, myself, that there is another side to the question. Surely the object of uniform is to form the fighting unit, regiment, battalion, or whatever the corps may be. Now schoolboys are to learn, but not to fight. I would almost go so far as to say that the present fashion of putting schoolboys into uniform is actually an obstacle rather than a facility in the way of military training.

For schools where a uniform is undesirable, a miniature rifle club affiliated to the N.R.A., and battalion drill officered by boys, possess such enormous advantages over a uniformed corps that it is difficult to imagine why any of them should ever have been induced to copy the great public schools in forming uniformed corps. To show how easily and inexpensively this may be done is the object of this paper. The subjects of (1) shooting, (2) drill, are conveniently taken separately.

Shooting.

The first step to be taken is to decide upon the place for the range. Twenty-five yards is a suitable distance; ten or fifteen is enough for a beginning; fifty is as much as anyone can want. The more out of the way the better, and any odd corner hitherto available only for mischief is the best place for its construction. Some kind of wall or bank at the target end is necessary, and against this some kind of butt must be placed to stop the bullets. The Morris Tube Co. provide butts of timber backed with steel plates, size 7ft. × 3ft., costing £3; but for a cheaper butt four inches of earth or gravel between boards does just as well. Old railway-sleepers are equally effective. Having decided upon the range, the secretary of the National Rifle Association, Bisley Camp, Brookwood, Surrey, should be informed; the district inspector of musketry will then visit and pass the range. This should be done before any other step is taken, as the advice obtained may be valuable.

We now come to the question of rifles and ammunition. The rifles in use for short ranges are as follows:—(1) service rifles with adapters, (2) service rifles with Morris tubes, (3) miniature rifles.

An *adapter* is an instrument fitting into the breech of a service rifle to enable it to fire a small cartridge with a light bullet of the full size of the bore. The ammunition costs from 35s. to 45s. per 1,000.

A *Morris tube* is a tube fitting the entire length of the barrel to enable a small cartridge with a small bullet to be fired. This cartridge is known as ·297/·230. The "short" cartridge costs from 15s. 6d. to 20s.; the "long," which is a great deal more accurate, 22s. 6d.

The Morris tube has been by far the most generally used for teaching shooting, but this is only because it enables the service weapon to be used for short ranges. By its means, the soldier can have his service rifle, or the sportsman his shot-gun, converted into a miniature rifle for barrack-yard or indoor practice; but for a school which does not possess service rifles, but must buy its rifles expressly for the purpose in view, it is much better to obtain miniature rifles.

Miniature Rifles.—These may be had to fire either the ·297/·230 or the ·22 cartridge—the smallest rifle cartridge made. Now the latter has the advantage not only of being very much cheaper—10s. to 12s. 6d. per 1,000—but also of being very much more accurate than the ·297/·230. I should therefore have no hesitation in advising any school to go in entirely for ·22 rifles, but some care must be exercised in selecting them. A ·22 rifle can be bought for 10s. 6d., but such rifles are mostly toys, or, being intended as rook or rabbit rifles, they have been made as light as possible. If the rifle is to lead up to the service weapon it should not be too light or too short; it should be seven or eight pounds in weight at least, and it should have military sights. The military sight may be, and probably is, inferior in accuracy to many other patterns, and we are looking anxiously forward to its improvement; but while it remains on the service rifle it should certainly be adopted by the rifle clubs. A weapon which is in all respects a facsimile of the service rifle, but taking the ·22 cartridge, has just been put upon the market, I believe by the B.S.A. This was offered to me last October for £5 5s., and a few days ago for £4 5s. If I were ordering new rifles I would certainly get one, but unless it can be sold for about £3 3s. it will probably be out of the reach of school clubs.

Approximate cost of other rifles:—Light Winchester or Martini, from 12s. to about £2 10s.; Stevens's "Ideal," £3 8s.; Stevens's "Favourite," £6 5s. Martini-Enfield rifles may be obtained from the N.R.A. at 38s. each, which can be fitted with Morris tubes at 22s. 6d. each.

The War Office supplies six service carbines ready fitted with Morris tubes for £13 14s. 3d. My experience is that these carbines are less accurate than rifles.

A committee of the War Office is at present sitting to decide upon a standard pattern of miniature rifle for schools. It is understood that

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their recommendation will shortly be published. An account of this rifle appears in the *Field* for March 10th (p. 376).

The N.R.A. is willing to make a grant up to the value of £13 16s. 6d. to any school starting a rifle club, provided that the school produces a like amount, and that the grant be not expended in ammunition but in preparing the range and buying rifles.

The N.R.A. is at present considering the possibility of giving a week in August at Bisley to non-uniformed secondary schools. If this is done it will put the coping-stone on our work; nor can anything more be desired than that those who have practised miniature shooting during the year should have a week on the Bisley ranges in August, only the N.R.A. must lend us the rifles for the purpose.

Targets.—The standard target adopted by the N.R.A. for twenty-five yards is as follows:—Bull's-eye, 1in. diameter; inner, 2in. diameter; magpie, 4in. diameter; outer, rest of target, 6in. square.

These measurements would be doubled for fifty yards, halved for twelve and a half yards, and so on. Targets are sold at 1s. 6d. per 100 for the 1in. bull, and 5s. per 100 for the 2in. bull.

Marking.—It is of the greatest importance in teaching that the position of every shot shall be marked, and I am inclined to think that it is safer for boys not to have the marker's mantlet in the line of fire; boys are too careless to be trusted in such a mantlet. Some recommend a binocular at the firing-point, but with this it is difficult to tell the difference between a bull and a miss. The best arrangement is for the marker to be in a shelter, made of the same materials as the butt, to one side of it, and for him to come out in front of the targets to mark, the following rule being rigidly enforced:—"Every rifle after firing must have the breech open." It is the duty of the instructor to see that this is done, and only then to give the signal by whistle or otherwise for the marker to leave his shelter. With beginners, the instructor has to be a kind of phonograph grinding out, "Open your breech. Open your breech." But after a lesson or two the practice becomes automatic, and every boy's hand goes naturally to bolt or lever directly his eye leaves the sights. Magazine or repeating rifles should in no circumstances be allowed on the school range.

A useful thing for teaching is a sandbag supported on a tripod, on which the rifle remains in any position in which it is put. The beginner then adjusts the unloaded rifle on the sandbag to what he thinks is the proper position, so that the instructor, looking along it, can see if back-sight, foresight, and bull are properly placed relatively to one another, and no one should be allowed to fire until he has done this to the instructor's satisfaction. Four beginners or six more experienced boys are as many as any instructor can manage. Shooting should be first taught in the prone position and afterwards kneeling; it is questionable whether the standing position is worth teaching at all.

Besides shooting at the ordinary target, which, however, is far the most popular, we have introduced the following by way of variety:—

Telaramic Targets.—These are sold by the Telaramic Target Co., 3 Barronstrand Street, Waterford. They are small pictures of men, horses, &c., giving at twenty yards the apparent size at 200, 500, 1,000, &c. They take a lot of hitting.

Disappearing Targets.—Any arrangement made in the school carpenter's shop by which a target can be made to rise and fall behind an iron plate faced with wood.

Team Firing.—This is a good thing for a "show" day. Both teams fire simultaneously and as fast as possible at little wooden figures, each of which represents one man of the opposite side. When any figure is shot down, the man represented by it must retire.

Unknown Ranges.—The simplest way to simulate unknown ranges is to put a false foresight on the gun—a nail stuck through half an inch of rubber tube answers very well. The beginner then learns to slide the sight bar up and down until he finds the target.

Cost.—We are now in a position to estimate the approximate cost of introducing proper instruction in rifle-shooting.

Capital Expenditure.—£10 from the school *plus* £10 from the N.R.A. This should provide the range and from four to six rifles.

Annual Expenditure.—6,000 rounds ·22 ammunition, £3; targets, 15s.; cleaning materials, 5s.; affiliation fee to N.R.A., 10s.

The cost of instruction will be whatever the school is able to afford. Since drill is already in all their schemes, it will probably not be very difficult for the drill-instructor to take up the rifle-shooting as well. It is not a difficult subject for an assistant-master to take up, and if it could be made the means of a small addition to the miserable salaries which so many assistant-masters receive, the school would not be very much the worse.

It is not necessary to make shooting compulsory; boys are so keen on it that they rarely miss their shooting lesson. Ever since 1900, we have had all boys over fifteen in the shooting-squads, and those below that age have been allowed to join as a special privilege for good work, good play, or other good behaviour in the public service. The shooting is never allowed to interfere with games. We find that it is very convenient just after midday dinner, when there is an hour or so devoted neither to work nor play. The question has been asked whether every boy shoots. By arranging that every boy over a certain age can shoot we ensure that the boy who completes his education shall have learnt the use of the rifle. We do not teach shooting to boys of nine, because we assume that they will be able to learn it before they leave school at fifteen.

Can rifle-shooting be taught with air-guns?

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Well, it is better to shoot with air-guns than not to shoot at all, but boys do not take so much interest in it as not being "the real thing," and nothing like the same accuracy can be obtained. Last summer we tried the following experiment:—We arranged the best eight shots in two teams as equal as possible, and then shot a match: air-guns at ten yards on a 1in. bull *v.* rifles at fifty yards on a 2in. bull. The following were the scores (h.p. 35):—

Air-guns.		Rifles (Morris tubes).	
A	19	W	21
B	24	X	30
C	27	Y	25
D	19	Z	27
	89		103

Air-guns (ammunition about 1s. per 1,000) might be useful as a preliminary to miniature rifles, but could not replace them.

Drill.

The development of a system of drill for schoolboys has been entirely the work of the Rev. C. G. Gull, late headmaster of the Grocers' Company's Schools, Clapton, and anyone who has seen his boys drill must admit the excellence of his work. As a rule, drill is not popular with boys, and it is difficult to get them to take it seriously. Their attention is so easily distracted, and the passing of a bird or the approach of a sheep is sufficient to throw them into the wildest excitement. Mr. Gull had certainly got over this. On one occasion I saw his boys drilling on a common when a football, which was being kicked by some outsiders, rolled to the feet of a company. Not a single boy took the slightest notice of it—a fact which speaks volumes for the earnestness with which they drilled. Boys will certainly drill better if they are given a dummy rifle to hold, and it is probable that a band will considerably improve the marching. Boys find more interest in open-order than in close-order drill, and it certainly encourages more independent action among the officers.

The question of finding time during the school hours we settle as follows:—During the two winter terms we do no battalion drill, and our afternoon time-table is: first lesson, 2.30 to 3.30; second lesson, 3.30 to 4.30. During the summer term, whenever the weather is suitable, we have: first lesson, 2.30 to 3.15; second lesson, 3.15 to 4.0; battalion drill, 4.0 to 4.30; and we find that we make this change, on an average, about two days a week.

Our drill is wholly officered, even to the commander, by boys; assistant-masters and the drill-instructor help, but their duty is to assist the officers who are to give the words of command or the signals themselves. The officers carry singlesticks, and the rank and file dummy rifles of wood costing less than 1s. each. We do not go below boys of twelve, but we bring into the field a battalion of five companies of sixty each.

The cost of forming a band is approximately—

3 Side-drums	£8	8	0
1 Bass-drum	6	0	0
12 B Flutes at 10s. 6d.	6	6	0
2 F Flutes at 15s.	1	10	0
1 Piccolo		10	6
1 Triangle		10	6
	£23	5	0

Less discount, the amount is about £20. This is a considerable item, but every schoolmaster knows that people will pay for music in comparison with other things in the proportion of the sack to the bread in Falstaff's tavern-bill.

The battalion movements which we carry out are as follows:—

Close Order.—The companies, having been formed up and numbered, form fours, and march in fours to the parade ground, advance from fours into column, form into line, advance and retire in line, present arms, advance *en échelon*, re-form column, form column of half-companies, of sections, re-form column, march past, and form square.

Open Order.—No words of command, but all directions given by whistle and signal. Extending and closing on centre, right or left, advancing and retiring at the quick or double, lying down and rising, changing front.

The above list is not intended to be exhaustive. It can probably be extended and improved. It represents a moderate standard at which any school can aim. Whether boys who have been through the above course would be of any benefit to the country from a military point of view, I must leave for others to say. The chief thing I have noticed, speaking solely as a schoolmaster, is that, by observing how boys carry out the duties of an officer, one can ascertain what boys are able and likely to exercise authority, and can pick out boys likely to make good prefects, even if they are not among the best scholars.

As this paper is addressed to believers only, I have preferred not to enter into any argument on the question of the advantages or drawbacks of military training, but I cannot help making a short reference to the letter of H. G. A. in The School World of February last. H. G. A. thinks that to have men trained to arms will encourage among the people a demand for war. I should myself think that most people would be less likely to urge on war if they knew that they might have to do the fighting themselves, than if they thought that they could pay others to do it for them. I am only judging others by myself; probably H. G. A. is doing the same: if my views are possibly those of a coward, H. G. A. must be a lineal descendant of the Irishman who sent his little girl out to ask if there was to be a fight, "'Cos, if so, father would like to be in it."

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THE EQUIPMENT OF A SCHOOL MUSEUM.

By OSWALD H. LATTER, M.A.
Charterhouse.

IT is nowadays generally recognised that the museum is a necessary part of the educational machinery of a school. Inasmuch as the appeal to the intellect and reason is made solely through the eye, it will be convenient, first, to consider the requirements of the building itself, in order that its contents may be seen to the best advantage. Above all, then, it is necessary that ample light be admitted. This is best secured by continuous top-lights, not in the walls and near their top, but in the very roof itself; in the end-walls further windows are an advantage, but the side-walls should offer as much show-space as possible. Further, in order to bring every square foot of the wall area within easy view, there should be a narrow rail-gallery with an open (gridiron) floor running all round the room, if the height of the roof be anything over fourteen feet from the floor. By thus utilising to the utmost the whole of the available wall area, the floor is left clear for a few select and important show-cases, and the undignified appearance of an overcrowded display is avoided. A parquet is preferable to a boarded floor, as being more free from vibration and also quieter to the tread. If the museum is much frequented, as is to be hoped, there will inevitably be brought on to the floor a certain amount of dirt, necessitating fairly frequent sweeping, and the up-stirring, unless prevented, of that pest of all museums—dust: dust which will settle upon every glass surface, and will find its way into the most carefully closed case, causing hours of labour alike to the school servant and to the skilled curator or master-in-charge. This nuisance may be very largely reduced by applying to the floor an oily preparation, "Florigene," obtainable from the Dust Allayer Co., 165 Queen Victoria Street, London, E.C. The entry of fine dust into professedly dust-proof cases is best obviated by having in each case a hole of reasonable dimensions through which there is an easy passage for the air. This hole must be well filled with cotton-wool, which will act as a dust-filter, and allow the air to pass through purified. By affording a wide and easy air-passage to the currents which are inevitable in consequence of changes of temperature, all movements of air through the hinges and other narrow junctions are practically prevented, and thus dust enters only through the trap, in which it is securely arrested.

Adjoining the main room of the museum, and on the same floor (the ground floor is best), there should be at least one fair-sized and well-lighted workroom and storeroom. Specimens can seldom be placed in their right positions immediately they are received, and often they need a more or less lengthy preparation, which can only be bestowed during odd minutes here and there by the master-in-charge—usually a man with a full complement of ordinary class and laboratory work to attend to. Hence, a room where the specimens can be left undisturbed between the periods of work is an absolute necessity. A second workroom for the pupils is also of enormous value, and may conveniently be the headquarters of the natural history club. This institution ought to be the chief contributor to the museum collections, for, though names and addresses of firms from whom specimens can be purchased are given below, the exhibits should, as far as possible, be the result of work done in the school itself. There is no surer way of securing interest being taken in the museum than to get the pupils themselves to spend time and thought over its embellishment. That which has cost nothing is only too often lightly esteemed.

Though the practice of defining an object by stating what it is not is generally to be condemned, yet in the present instance it is very necessary to insist that the museum is not, and must not be, a mere miscellaneous assemblage of curiosities, abnormalities, and other specimens—the abandoned hobbies of munificent donors. There must be a definite aim and principle of selection, to which the responsible master or mistress must rigidly adhere, even at the risk of discouraging presentations. No curator can have been long in office without experiencing the painful necessity of saying "No, thank you," to the offer of some collection, perhaps of real value in itself, and appropriate enough in some other museum, but entirely out of place in that of an English school. A notice of "No rubbish to be shot here" is at times a tempting placard for the museum door, but the implied discourtesy may perhaps be avoided by posting, in some conspicuous place, a list of objects of which the museum is in need, and on which intending benefactors may expend their generosity with advantage. It is also convenient to reserve for "recent additions" one case, in which unsuitable gifts may for a time be displayed before being consigned to their proper place!

What, then, are to be regarded as the proper limits of a school museum? First and foremost, I would insist that, with very few exceptions, all specimens should be British, or, at any rate, such as occur in these islands, the qualification being intended to admit foreign examples of species that occur but rarely this side the Channel. Secondly, especial prominence should be given to the fauna, flora, and geology of the immediate neighbourhood. From these special instances as texts, the museum should preach an illustrated sermon on the leading facts and principles of the sciences of biology and geology. To take the strictly local first. The physical features of the district are best explained by means of a relief model on which the various geological strata cropping out are indicated by distinctive colours. The model should include all the country within, say, a radius of ten miles from the school, and should show clearly the courses of rivers and streams, and the "water-divides" if any such occur. The model can easily be made by the pupils themselves

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from the data of the six-inch Ordnance map, though it will be necessary to construct the model on a more reduced scale to avoid undue bulk. In any case, the vertical scale must be considerably (about ten times) exaggerated as compared with the horizontal, or a disappointing flatness will result. Near to the model, the geological collections will find their natural place. These should consist chiefly of well-chosen petrological examples of the principal formations of the district, and of the fossils characteristic of each. The nature of each formation, its history, and the evidence afforded by its fossils should be set forth in plain, untechnical language. If space permit, there may be another geological case, arranged stratigraphically, in which a few of the more important fossils of each stratum are displayed, their structure explained, and their affinities with existing forms of life pointed out. It is a mistake to attempt to exhibit exhaustive (and exhausting) series of fossils. Complete collections are best placed in drawers, readily accessible, beneath the show-cases. Very excellent series of photographs illustrating the most notable geological exposures in this country have been issued by the British Association. They can be obtained from Prof. W. W. Watts, F.R.S., and fully deserve a place in every school museum. Each photograph is accompanied by a short and lucid description. They should be framed and glazed and hung on the walls in some suitable place. Portfolios are apt to escape attention, and their contents are liable to injury during inspection.

Passing to the botanical department, the *hortus siccus* must be condemned without reservation. However successfully flowers are pressed and dried, they are not then fit subjects for the school museum. A few well-preserved and dissected typical specimens set out, some dry, some "wet," and with the express intention of demonstrating the diagnostic characters of the more familiar orders of plants, are of more value than the most complete herbarium. The more minute features of the floral anatomy can be made clear by the aid of enlarged drawings, or of wax models such as those supplied by Mr. H. E. Smedley, 628 Green Lanes, Harringay, N. During the spring and summer months it is a good plan to have freshly gathered specimens of such plants as are in blossom placed in vases of water on a show-table in the museum. The flowers should be grouped according to their natural orders and genera, and each provided with a conspicuous label giving the popular and scientific names. It is best to use, for this purpose, a show-table such as those seen at flower-shows, *i.e.* with a number of holes pierced through it, so as to allow the stalks of the plants to pass into vessels of water kept out of view, and out of reach of accident, beneath the planking.

The various forms of climbing organs are also good exhibits. Pot plants of the creepers and climbers can be brought to a suitable size out of doors or in the greenhouse, and transferred to the museum for a few weeks, without serious injury to the specimens. At times, no doubt, a friendly nurseryman might be induced to lend a good series. It will be necessary to call attention to the nature of the climbing organ in each case by means of a drawing and clearly-worded label.

Fruits, both succulent and dry, form excellent museum subjects, and their modes of dispersal can readily be appreciated by young pupils and by the general public, to whom, by the way, the school museum ought to be accessible at certain hours, and, if possible, on Sunday afternoons. The succulent fruits must, of course, be exhibited as "wet" preparations. They may be placed in a 3 or 4 per cent. solution of the commercial 40 per cent. formalin in rectangular, not cylindrical, glass jars with a glass lid. The fruit itself may be held in position either by means of a couple of fine glass rods passed through it, or it may be attached by means of india-rubber solution to a sheet of thin glass or to a sheet of celluloid. This last is very convenient material, as it can readily be cut to any size or shape by scissors, and when placed in the formalin solution is hardly visible. The same treatment may also be applied to seeds in the successive stages of germination. The glass covers of the jars can be fixed in position by the india-rubber solution. Celluloid is supplied in large sheets of various thickness by Messrs. Fitch and Co., Seldon House, Fulwood's Rents, Holborn, W.C.

Turning now to the zoological section. Here the museum has a double function to perform. It is certain, and quite rightly, to be used as a place of reference by young naturalists who are anxious to identify specimens collected in the pursuit of their own hobby. Now, juvenile hobbies are things to be encouraged; apart from their moral, intellectual, and æsthetic value, which is great, many a childish hobby has ere now proved the foundation of solid work in after life, and of great gain to the stock of human knowledge and happiness. It is a reproach to our schools that so many hobbies are but short-lived and lead to no good result either in their temporary possessor or in the community. Why is it that this is so? Largely it is due to the fact that we do not sufficiently encourage in hobbies an interest that is intellectual. The stage of collecting natural objects from mere lust of possession is of almost universal occurrence, nor is it any matter for regret that this is usually of but brief duration. But if, while this phase is dominant, we could lead our pupils to collect less, but study more closely their specimens, we should produce better results and earn the lasting gratitude of many. The museum is undoubtedly the best instrument for achieving this end. It is therefore desirable, not so much to accumulate complete collections of the classes of British animals, though I must not be understood to discourage these, but rather to procure a few representative examples of each, so arranged as to display the anatomical features which are of value in the classification of the several groups and in the determination of genera and species. Further, by means of drawings and

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full descriptions, the function of the organs and the general working of the animal machinery should be made clear. In short, the zoological cases should be an introductory text-book of comparative anatomy and physiology, illustrated, as far as possible, by the hand of Nature herself.

For example, the mammal collection might comprise skeletons of a sheep, a fox, a rabbit, a hedgehog, and a bat, together with a few well-stuffed specimens, or perhaps good pictures if space be limited. Every bone of each skeleton should be clearly named, and attention directed to the form of the teeth, limbs, &c., as correlated with the diet and habits of each animal. A few "wet" specimens will be necessary to show the relation and working of the muscles and internal viscera. These can be obtained from Messrs. Watson and Son, 313 High Holborn, W.C. Other mammals can, of course, be added in their appropriate places as opportunity permits. And here it may be remarked that the bats are best exhibited as "wet" preparations in formalin. The smaller insectivores and rodents can be satisfactorily "mummified" in vapour of formalin as follows:—The freshly killed animal should be fixed in a good attitude on a sheet of cork or soft wood, and the whole then placed in a biscuit-tin or other tolerably air-tight receptacle, in which is to be set a saucer filled with formalin of full strength. The cork should be raised on a low support to prevent it from getting wetted by the formalin or by any condensed liquid that may trickle down the sides of the tin. In some cases it may further be advisable to inject some formalin *per anum*, or through the walls of the abdomen and thorax by means of a hypodermic syringe. The specimen should be left in the closed vessel for about one month, and may then safely be removed. A little practice will enable anyone to insert artificial eyes, if desired. Specimens thus treated are not subsequently attacked by moth or mite, nor do they give any indication of decay. The method has the advantage of preserving the fur of the animal in a perfectly natural condition, entirely devoid of that sleek smoothness so generally observable in stuffed specimens, and so utterly untrue to nature.

One bird's skeleton well labelled and explained would probably meet school requirements, but this can be supplemented by a series of heads and feet illustrating the relations between the form of these organs and the habits of the bird. There should be at least two birds stuffed and set up, not with a view to natural attitude, but solely for the purpose of demonstrating the technical "regions" of the external anatomy. Messrs. Watkins and Doncaster, 36 Strand, W.C., will supply these to order; the labelling, however, must be done at the museum, preferably by some neat-handed pupil. The various types of feather should also be set out and their parts labelled. White feathers on a black background show up best. The minute structure of a feather may be shown by means of a model constructed of thick white paper, or of the substance of the large fungus (*Polyporus*) that often grows upon the bark of decadent birch trees. The flesh of this fungus is beautifully white and homogeneous in texture. When fresh, it can be cut into strips of convenient thickness and dried; it can then be cut easily into any shape desired. In appearance, it resembles pure white leather, and it is quite permanent. The stuffed birds of the general collection are most convenient for use when each specimen is set up in a separate case, so as to be easily movable to the lecture-room when required. An appropriate scene painted upon the background of each case is a far better setting than the grasses and foliage so often inserted by taxidermists. The labels on these cases should state the popular and the scientific name, the date and locality of the capture of the individual, and also the nature of the food, the geographical range, and the migratory or "resident" character of the species. The eggs, however exhibited, must be carefully protected from daylight, which rapidly destroys the pigment of the shells. If nests are included, great care should be taken thoroughly to destroy all insect life in each by a thorough baking in an oven. If this precaution be neglected, beetles, moths, and other "small deer" will make their appearance and cause endless trouble and mischief in the cases. If there be any suspicion of such unwelcome visitors, they may be exterminated by placing a saucer full of carbon bisulphide in the suspect case, and allowing the liquid to evaporate after rendering the case as air-tight as possible. On account of the evil odour of carbon bisulphide, the operation is best performed at the beginning of the holidays, when visitors will be few for some time. Of the other vertebrate classes, the British reptiles and amphibians are so few that with little difficulty the whole number can be obtained. They should be treated on the same principle as the higher groups, but must be preserved "wet" in formalin. The amphibians, of course, afford the best opportunity of conveying ideas concerning development and the bearing of embryology on the theory of evolution. It is easy to rear young frogs from the egg, and the process may be carried on in the museum itself. All that is necessary is to place a little of the spawn in water in shallow glass bowls with a few green water-weeds, and the rest will follow. A few specimens should be picked out from time to time, and placed in formalin in small glass tubes. When the series is complete, the tubes can be attached in due order to a sheet of celluloid, and the whole mounted and sealed down in a glass jar containing formalin solution. It is useless to attempt an exhaustive collection of fishes; it will be sufficient to exhibit and explain skeletons and stuffed specimens of two cartilaginous and two bony fishes—say dog-fish and skate, pike and plaice. To these may be added a preparation of an injected specimen dissected to show the peculiarities of the circulatory and respiratory systems.

Molluscs had better be limited, in the general collection, to the land and fresh-water species. There should be, in addition to these, fully labelled

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dissections and shells of common representatives of the chief molluscan orders, and fossils of the more remarkable extinct forms. This latter series might include the snail, fresh-water mussel, limpet, oyster, cuttlefish, octopus, shell of nautilus, and ammonite and belemnite fossils.

Each one of the orders of insects should be honoured with dissected and fully explained specimens in all stages of metamorphosis; the actual collections should be made and the specimens identified by members of the school, as part of the work of the natural history club. During the summer term, breeding-cages containing caterpillars, and bowls of water in which are being reared larvæ of dragon-flies, gnats, and water-beetles, are certain to be both instructive and popular. If the arrangements permit, an observatory beehive, with entry and exit through one of the window-panes, is an excellent object-lesson in the economy of social insects; and alongside it might be placed a collection of wasps' nests by way of contrast. There should also be a collection both of useful and injurious insects, and examples of the ravages of the latter should find a place.

The crustaceans, though so numerous in species, may perhaps be confined to the river crayfish, the lobster, and the species of crabs most commonly found between high and low water mark, and the rock- and ship-barnacle, of which latter the life-history should be set forth by drawings.

A convenient method of dealing with the worms and cœlenterate polyps is to arrange a "shore-pool" case, in which are placed the commoner marine worms and examples of the jelly-fishes, sea-anemones, and sea-firs. The land and fresh-water relatives of these animals may be set out in a small adjoining side-show. The unicellular animals can only be introduced by means of models or drawings, but, for the sake of completeness, a few of these should be included.

In the subjoined list are given the names and addresses of some of the firms whose goods are necessary to the museum outfit. It is not intended to recommend these in preference to others; I merely chance to have had experience of them.

For *wall-cases and table-cases*—Messrs. Holland and Hannen, 12 Hyde Street, Bloomsbury, W.C.

Tickets, label-holders, and many other useful articles—Messrs. W. Potter and Sons, Ltd., 161 Aldersgate Street, E.C.

Stationery—Messrs. W. Straker, Ltd., 49–63 Ludgate Hill, E.C.; Messrs. Partridge and Cooper, 1 Chancery Lane, W.C.

Ivory, bone, and metal labels—Hughes Label Co., Ltd., 34 Great Titchfield Street, W.; Photoglyptic Co., 82 Camden Road, N.W.

Glass jars—Messrs. Baird and Tatlock, 14 Cross Street, Hatton Garden, E.C.; Messrs. Ford and Co., Holyrood Glass Works, Edinburgh.

Glass bowls, useful as small aquaria—Messrs. Fowler, Lee, and Co., 78 Bank Street, Maidstone.

Skeletons, dissections, &c.—Messrs. Watson and Sons, 313 High Holborn, E.C.

Type collections suitable for small and for larger museums—Mr. R. J. Brogden, 119 Brecknock Road, London, N.W.

NEW PHYSICAL AND CHEMICAL APPARATUS.

By G. H. Wyatt, B.Sc., A.R.C.Sc.
Emanuel School, Wandsworth Common.

A PREVIOUS article of this nature, addressed to masters and mistresses in secondary schools, appeared in The School World for October, 1904. The following selection has been made from apparatus exhibited by the makers at St. Paul's School and at Westminster School, under the auspices of the I.A.A.M. and of the Public Schools Science Masters' Association respectively. It is believed that the pieces of apparatus are new and not of a cost exceeding the possibilities of a good-class school.

Messrs. Baird and Tatlock[1] have introduced a burner known as the "Sparsam," in which a tap with a lever handle at the base of the burner regulates the air and the gas simultaneously. Any size of luminous or non-luminous flame may be obtained by turning the stopcock, and the flame may be very much reduced without fear of "striking back" or being extinguished. (3s.)

Messrs. F. E. Becker and Co., Ltd.,[2] are supplying a new form of Atwood's machine, of which the chief points are a simple pneumatic release, agate centre and bearings for the aluminium wheel, absence of dropping platform, and no swing given to either weight when starting. The upright is a square rod of brass, 8ft. long, and the machine is fixed to the wall. (£4 10s.)

Figs. 1 and 2 show the construction of two pieces of expansion apparatus designed by Mr.

Fig. 1.

C. F. Günther. The first apparatus, for measuring linear expansion, takes several rods of metal at the same time, and each rod is brought into

[1] Baird and Tatlock, Cross Street, Hatton Garden, E.C.
[2] F. E. Becker and Co., 33–37, Hatton Wall, E.C

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measuring position by turning the steam jacket on its supports. Contact with the spherometer is tested by the reflexion method, the end of each rod being polished and plated.

In the second apparatus, for measuring the absolute expansion of a liquid, contact is indicated in the same manner by reflexion or by an electrical signal. A further improvement consists in surrounding the lower end of the hot column of liquid with a few turns of steam-pipe, which have the effect of ensuring a temperature of 100° C. at the point of bending to the horizontal. A point of importance is that, in both pieces of apparatus, the spherometer is fixed firmly to a support, and does not stand precariously on a smooth glass plate.

The "Mecker" burner is an improved form in which a solid non-luminous flame is produced. The temperature throughout the flame is practically the same, no blue cone being visible. Tests at the National Physical Laboratory give 1430°–1470° C. as the temperatures at the centre of the flame at various heights above the gauze top, the numbers for an ordinary burner at corresponding positions in the flame being 500°–1350°. (8s. 6d.) The same burner is supplied provided with an arrangement for a forced air draught (14s. 6d.), and is also fitted with furnaces of various types, an ordinary crucible furnace costing £2 11s. 6d.

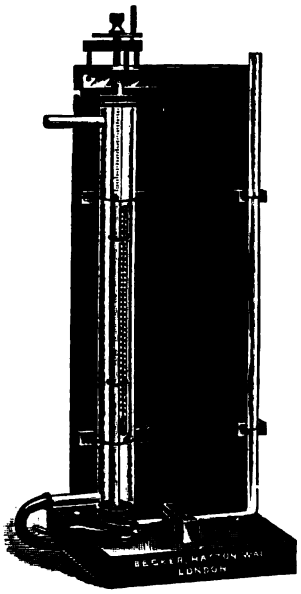

FIG. 2.

Messrs. Brown and Son[1] have brought out an apparatus under the name of "The Desideratum Automatic Still," which may be used by itself or in conjunction with a water-oven. In the latter case a great economy of space is effected. The apparatus is of a compact cylindrical form and efficient. A still nine inches in diameter and fourteen inches high delivers six pints of distilled water per hour at a cost of three-farthings per gallon. The complete still, with burner, costs £2 1s. 9d. A combined copper water-oven and still can be had for £4 10s. A six-compartment oven with still costs £9. The same firm is making standard water and gas fittings for laboratory purposes, and much apparatus of a nature suitable for technical and hospital work.

The high quality of the instruments supplied by the Cambridge Scientific Instrument Co.[1] is well known to science masters, and not only to those who can afford to buy the apparatus will the following descriptions be of interest:—

The sensitive micro-electroscope (Fig. 3) used and designed by Mr. C. T. R. Wilson, F.R.S., in his experiments on "the ionisation of air." Details of his work are to be found in Rutherford's "Radio-activity," recently published, and reference is made to the extraordinary delicacy of the instrument. There is one very narrow gold leaf which is supported on a wire, the continuation of the latter corresponding to the second leaf of early days. The supporting wire is insulated by a sulphur bead, and the leaf system is charged by a second "upper" wire actuated by a magnetic key on the outside of the case. The insulation is so perfect that the leakage is due to the natural ionisation of the air contained by the case. The motion of the leaf is observed by a microscope with micrometer eye-piece through an opening in the metallic case. Two other openings, covered with thin paper to preserve the conducting character of the case, serve to admit radiations which are under experiment. The price without microscope is £2 10s.

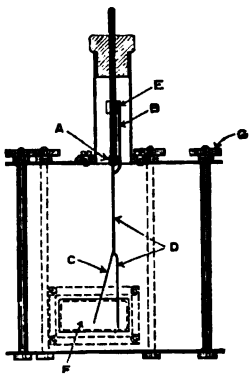

FIG. 3.

The special feature of the Broca galvanometer lies in the small magnetic moment of the "needle," which consists of two vertical parallel magnets, having a consequent pole at the centre of each, and fixed very close to one another. Quartz fibre suspension and very accurate astaticism combined further increase the sensitiveness of the instrument. (£7 10s.)

The Dolezalek electrometer is of the quadrant type, but of exceptional sensitiveness. This is due to the "needle" being very light, the quadrantal case very shallow, and a quartz fibre suspension. Figures obtained by the designer show a deflection of 8·5mm. at two metres for an e.m.f. of one millivolt. (£7 10s.) Standard cadmium cells (e.m.f. 1·0195 volts) may be purchased with a Kew certificate for £1 12s. 6d.

The Duddell thermo-galvanometer, for measuring extremely small currents and voltages, is capable of measuring the currents flowing in a Bell telephone when in use. It consists of a "heater" or coil through which the small current passes. The rise of temperature of this coil causes radiation of heat, excessively small in quantity, towards the thermo-couple of a Boys' radio-micrometer suspended between the poles of

[1] Brown and Son, 25, Charlotte Street, Caledonian Road, N.

[1] The Cambridge Scientific Instrument Co., Cambridge.

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a permanent magnet. In a trial experiment it was found that the smallest *detectable* current measured 2·3 micro-amperes. (£15 10s.)

Resistance thermometry apparatus, consisting of a Callendar-Griffiths bridge, resistance thermometer, and an Ayrton-Mather D'Arsonval galvanometer, can be purchased for £10.

Several firms supply Prof. C. V. Boys' geometric tripod stands which form supports to apparatus, adjustable to any height, each tripod being in geometric contact with the one beneath it.

Messrs. Gallenkamp and Co.[1] are making a number of pieces of apparatus, called the "Technical Series," which are designed for students' use, and are stated to give very considerable accuracy in practice. Each set is substantially made, and mounted on a thick teak stand.

Fig. 4 shows the apparatus arranged for measuring the coefficient of expansion of gases at constant pressure. The special points of the apparatus are the graduated bulb and limb attached, the tap at the bend which allows the pressure in the two limbs to be immediately equalised, and the water-jacket which surrounds the whole of the mercury or strong sulphuric acid used to confine the gas, and so renders unnecessary any correction for liquid expansion. (£1 15s.)

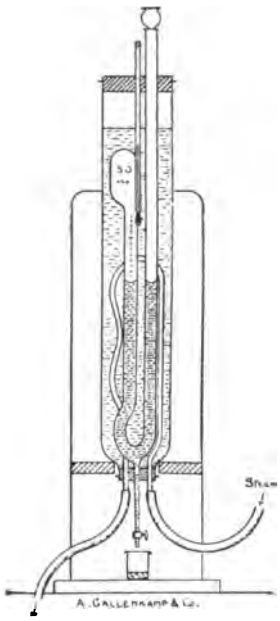

Fig. 4.

Other pieces of apparatus in the same series are arrangements designed for experiments concerning Boyle's law, pressure of saturated vapours, absolute expansion of liquids, and a constant volume air thermometer. The Boyle's tube is mounted on a support two metres in height, and consequently gives results extending over a wide range of pressures. (£2 5s.) The saturated vapour apparatus consists of a graduated barometer tube, the upper part being surrounded with a water-jacket, a small siphon being arranged to preserve a constant level of mercury in the cistern. (£2.) The absolute expansion of liquids is measured by Dulong and Petit's method. The capillary horizontal tube being provided with a T-piece and tap, the apparatus is quickly emptied, and another liquid can be then introduced. The side tubes are nearly one metre in height. (£2 7s. 6d.) The constant volume air thermometer is that of Jolly, with the addition of a side tube through which dry pure air may be admitted to the bulb at any moment to bring the pressure equal to that of the atmosphere. Range of temperature, from 250° to −100°. (£1 17s. 6d.)

The same firm supplies a Davies' combined furnace and tripod, which consists of a fire-clay body with asbestos outer covering, sheet-iron jacket, and metal chimney. The source of heat is an ordinary Bunsen burner, and, from tests indicated, the furnace is very efficient, copper melting in twenty minutes, brass in ten minutes, and so on. The apparatus should become very popular, for it is both strong and cheap (4s. 9d.). A new form of clamp is supplied for holding any tube apparatus without a retort stand. It is provided with a suspending wire frame, which allows the apparatus to hang vertically, and should be found useful for fixing burettes to the edge of a bench shelf. (14s. per doz.)

Messrs. J. J. Griffin and Sons[1] issue an extensive series of catalogues of special interest to schools. In the list of thermometers and pyrometers, means are offered of measuring temperatures from −200° to 4000°. Mercury thermometers containing nitrogen enable great accuracy to be obtained in the neighbourhood of the boiling-point of mercury. (4s. upwards.) An interesting method of compensating for slow changes of zero consists in fusing a small rod of another kind of glass inside the bulb of the instrument. (28s.)

Prof. W. F. Barrett's form of Dine's hygrometer is supplied by this firm. Two tanks furnish cold and warm water respectively to the thermometer chamber, and the formation of dew takes place on silver-plated copper. In Alluard's instrument the temperature is lowered by ether, and the dew is formed on a gilded surface placed close to a similar and surrounding surface, affording a means of promptly observing the actual production of dew.

The optical bench shown in Fig. 5 is three metres in length, and the uprights are so devised that the objects can be brought close up to one another. The separate pieces of apparatus included in the set can be easily seen from the figure.

Andrews's automatic vacuum regulator, Fig. 6, is designed for use with vacuum pumps when it is desired to maintain a constant pressure, *e.g.* in distilling under reduced pressure. A sliding rod, by pressing on a spring, according to its position, modifies and also maintains the pressure required to open a valve. The apparatus under exhaustion is connected to the side tube. Should the vacuum-pressure fall below that for which the spring is adjusted, air enters by the valve. (3s.)

Messrs. Philip Harris and Co., Ltd.,[2] have issued two large catalogues of physical and chemical apparatus, from which we can only select a few numbers.

The firm make a speciality of Atwood machines,

[1] Gallenkamp and Co., 19, Sun Street, Finsbury Square, E.C.

[1] J. J. Griffin and Sons, Kingsway, W.C

[2] Philip Harris and Co., 144–146, Edmund Street, Birmingham.

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which they supply in different grades at prices varying from £2 to £10 15s., each machine being of the wall pattern.

Fig. 5.

Figs. 7 and 8 show the construction of the patent timing arrangement, which can be applied to any form of machine. Pressing on a contact key releases one of the moving weights, and at the same instant causes the electro-magnetic lever (Fig. 7) to start the stop-watch shown. The other moving weight, striking the platform (Fig. 8), again completes the circuit, and so causes the lever to stop the watch.

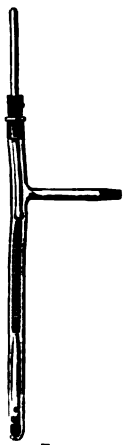

Fig. 6.

A D'Arsonval galvanometer is supplied by this firm for £2 7s. 6d. in brass case, and a cheaper form on mahogany base and under glass shade for £1 2s. 6d.

For electrostatic experiments a convenient indicating instrument is the ebonite needle—a strip of ebonite mounted on a pivot exactly like an ordinary magnetic needle. (3s. 6d.)

The O'Toole apparatus for measuring linear expansion employs the principle of the optical lever, or measures the displacement of the end of the rod by bringing back to the horizontal a spirit-level displaced by the expansion. (£1 12s. 6d.)

Fig. 7.

Useful pocket-books are issued by Messrs. Harris, comprising "science data" and a diary. Five-figure logarithms, arranged by Mr. A. Du Pré Denning to get over the difficulties of the "differences" in the low numbers, give log 4 to 9999 and antilog 0·0 to 0·699, together with various useful tables. These tables are also issued printed on a varnished card.

Messrs. W. G. Pye and Co.[1] issue a catalogue in which the items of interest are very numerous. A ballistic galvanometer (Hibbert's) is shown of the D'Arsonval pattern, and should be popular at its low price (£1 12s. 6d.), which includes an inductor of 200 turns. A two-volt storage cell may be had for 1s. 9d., suitable for joining with others to form large groups, and, for 2s. 6d., provided with brass terminals used singly as a standard. A convenient magnetometer (Searle's) consists of a brass holder provided with an aluminium pointer, and is capable of comparing strengths of fields from 0·5 to 4·0 c.g.s. units. (2s.) In magnetometric experiments the position of a magnetic pole is obtained more or less approximately with the ordinary rectangular-shaped magnets. The position is fixed with greater certainty by using Robinson magnets with spherical ends. These may be had for 3s. 6d. a pair.

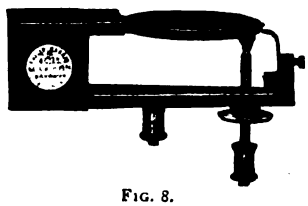

Fig. 8.

The absolute conductivity of copper for heat may be measured by means of Searle's apparatus, which is shown in Fig. 9. The teak case, packed with felt, may be opened for exhibiting the construction of the apparatus. It is only necessary to say that the heat is applied at one end of a twelve-inch bar by means of a steam jacket, and the other end of the bar is maintained at a constant temperature by a spiral tube through which passes a stream of cold water. (£5.)

For practice with lenses, a trial case containing fifty of various focal lengths should be most useful. (£2 15s.)

This firm makes a speciality of squared paper, both loose and in books, of various rulings, English, metric, and logarithmic. At the end

[1] W. G. Pye and Co., Granta Works, Cambridge.

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of the catalogue is an extensive list of apparatus such as is required by each set of students working at elementary courses in the various branches of physics.

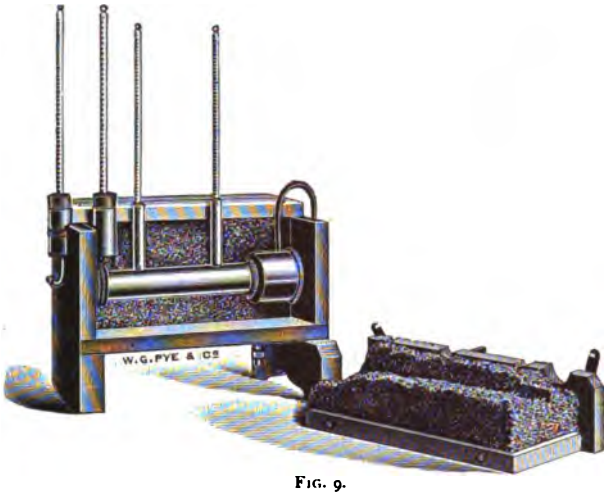

Fig. 9.

Messrs. Townson and Mercer[1] are supplying an improved form of Lavelle's expansion apparatus (21s.), and a model compass in gimbals (12s. 6d.). Fig. 10 shows a new form of eudiometer (Wilson's patent), the construction of which is easily seen. A and B are graduated tubes, the latter being provided with platinum terminals and surrounded with a jacket; C and E are three-way stopcocks, and F a mercury reservoir. By raising or lowering F, gases may be driven from or drawn into A or B, or driven from A to B, use being made of the three-way stopcocks.

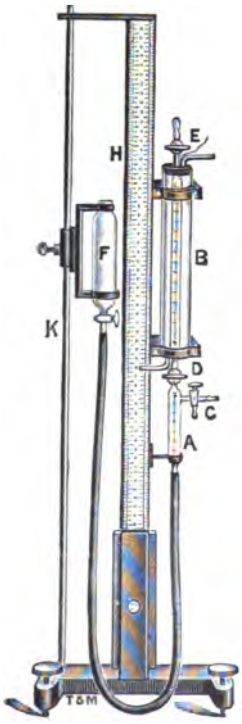

Fig. 10.

The instrument may be used for illustrating Boyle's law for pressures greater or less than that of one atmosphere, the gas experimented upon being in A or B respectively. For Charles's law the gas is heated in the tube B. To find the various volume changes of interacting gases either on sparking or on simply mixing, the gases under examination are stored in A and B, and brought together by raising the mercury reservoir, F. This apparatus should prove of considerable value in eudiometric work, one great advantage arising from the fact that the gases are measured in A and B before being mixed in the tube B. (£2 2s.)

[1] Townson and Mercer, Camomile Street, E.C.

Several firms are supplying porcelain Bunsen burners (4s.) for use in fume-cupboards, where corrosion takes place with great rapidity. The burners may be obtained provided with blow-pipe jets if desired.

PENS AND PENHOLDERS.

By J. W. Jarvis,
St. Mark's College, Chelsea, S.W.

Smith. The Clerk of Chatham: he can write and read and cast accompt.

Cade. O monstrous!

Smith. We took him setting of boys' copies.

Cade. Here's a villain!

Smith. He has a book in his pocket with red letters in it.

Cade. Nay then, he is a conjurer.

Dick. Nay, he can make obligations and write court-hand.

Cade. I am sorry for it. What is thy name?

Clerk. Emmanuel.

Dick. They used to write it on the top of letters—Twill go hard with you.

Cade. Dost thou use to write thy name? or hast thou a mark to thyself like an honest, plain-dealing man?

Clerk. Sir, I thank God, I have been so well brought up, that I can write my name.

All. He hath confessed; Away with him! He's a villain and a traitor.

Cade. Away with him, I say! Hang him with his pen and ink-horn about his neck.

2 *Henry VI.*, Act IV., Scene ii.

MR. THOMAS HODSON, in the "Accomplished Tutor," 1806, insists upon "a good pen and good free ink, without which it is impossible to write a fair copy." We wonder if Mr. Thomas Hodson ever tried to write with an hotel pen—that in the coffee-room preferred—or perhaps the pen and ink in the vestry of a country church, and if he found the pen good or the ink "free"? How he must have wished for the metallic stilus and the wax tablet of the Roman or the Greek! But the Roman and the Greek also used the true representative of the modern pen, a hollow reed, as is yet common in the East. We have seen it asserted that quills were used for writing as early as the fifth century A.D., and in Europe they were long the only writing implement, the sorts generally used being those of the goose and the swan. (Are not "Swan" pens extensively advertised now?)

This form of pen prevailed in England up to 1825, but almost a hundred years ago a Mr. Wise produced steel pens of a barrel form, mounted in a bone case for carrying in the pocket. They cost at first half-a-crown, and though they were reduced to sixpence they were not very popular, because they were of indifferent make, and fatiguing to use. In 1820 the well-known Joseph Gillott succeeded in making a pen of thinner and more elastic steel with a higher temper and finish. Further improvements have so reduced the cost and raised the quality that a gross of better pens are now sold by the same makers at one-sixth of

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the price of a single pen in 1821. Cast steel of the finest quality is used in the manufacture, and the various operations are performed by cutting, stamping, and embossing apparatus, worked chiefly by hand-presses. Birmingham was the first home, and is still the principal centre, of the steel-pen industry. Gold pens tipped with iridosmine—a compound of iridium and osmium, most infusible, and resembling gold in appearance—are also extensively used, and a good one will last for years. These expensive pens are generally fixed in a holder carrying a considerable supply of ink—hence the name fountain-pen. But the trouble with a fountain-pen is not the supply but the equality of the discharge, and the most successful form yet produced is an American invention.

Just as modern social life is perplexed by the minute division of labour, so the modern schoolmaster is confronted by the three divisions of his pupil's pen. He must be an authority on the nib, the barrel attachment, and the holder or shaft. If two are good and one is bad there is a chance of failure, and the modern child is quite bold enough to risk this. A nib tied to a stick by white cotton has not been unknown; indeed, a nib firmly held by the fingers has probably before now escaped the vigilance of the teacher, as many a loose nib found in the school ink-pot can testify. Mathematicians tell us that with three things we can make six permutations; with the three divisions of his pen the ink-stained fingers of an ingenious boy can make an infinity.

But to the nib. Nib is the same as neb (A.S. face, mouth, beak). It is allied to the Dutch sneb, a beak, compare the E. snipe, and it literally means the point of anything, particularly now of a pen, adapted to be fitted into a holder. Formerly it referred to cutting a point on a quill—

> "How profoundly would he nib a pen."
> Lamb, *South Sea House.*

One firm of manufacturers (Messrs. Gillott and Co.) have placed no less than forty-six varieties of nib on the market, together with seven varieties in which the nib is part of the barrel under the familiar trade name of "magnum bonum." Some of these are small—no thicker than knitting or crochet needles—and they are used for special technical purposes, chiefly in connection with architectural drawings. At the other end of the scale are pen-nibs with thick blunt points, exquisitely smooth for "grown-ups" afflicted with *cacoëthes scribendi.* They offer no resistance to our thoughts as they flow smoothly over the surface of the paper, and they lessen the fatigue of our weary hand. Between these two poles lies the schoolmaster's choice, and we say choice advisedly, for, if he will not decide, his pupil will for him, and bring to school some wonderful and fearful things in the shape of pen-nibs. Never shall I forget the joy of the boy who introduced a pen, the nib of which ran exactly at right angles to the shaft. He had obeyed the rules of the school that each boy should provide himself with a pen, and he not only proposed to use it, but to distribute others among his fellows. His teacher was young and inexperienced then, but he turned the occasion to good account, for it made an excellent working explanation of the phrase "driving a coach through an Act of Parliament," which occurred in the next history lesson.

The schoolmaster, then, must choose the nib, and not allow the eccentricities of the maker to fascinate the pupil. It should be of moderate length, varying from one and three-eighths to one and five-eighths of an inch, for younger pupils. The points should be fine, not abruptly ended as in a J, nor too long to lose their rigidity. They should be elastic under faint pressure, and be so tempered that they do not lose this elasticity after short use. If the points are too fine, they splutter and catch the fibres in the paper; if the points are too rounded (as in a ball-pointed pen), they offer too little resistance to the inexperienced hand. The design should be plain, though shoulders are recommended, as they give strength to the split point, and a small rectangular hole serves admirably as a reservoir for the ink. But one type of nib is not recommended throughout a school. As the pupils increase in dexterity, proficiency, and finger control, the nib should develop into a softer form, running more freely over the surface, and with a more rounded point. As facility increases, written exercises should be done with the maximum degree of rapidity consistent with full legibility. The hardness or firmness of the nib should not hinder thought, and the attention of the child should not be abstracted more than is absolutely necessary from the subject by the machinery which is being used. The "Carnegie Series"[1] of pen-nibs seems to meet the conditions laid down very satisfactorily. There are several choices among the fine and medium points, and they are neither too hard nor too stiff for young fingers. For this reason about three qualities of nibs are necessary for pupils from eight to sixteen years of age, and the promotion from one to the other is often an incentive to good work. Grown-up-ness is the ideal of the boy, and the pupil who feels he is growing up is capable of exerting himself beyond the dreams of an exacting master. The school nib, then, should be as simple as possible, should be provided from within and not from without the school until the pupil has reached the age of discretion, and a supply should be kept in each master's desk in readiness for emergencies.

The barrel or connection between the nib and the shaft is of some moment. It should be made of steel for rigidity, should grasp the shaft very firmly, and hold the nib securely. Here, again, let us put in a plea for simplicity, and for the absence of devices which are a snare to the boy and a worry to the teacher. Cheapness in the holder means inelastic and inferior steel in the barrel. Too many holes or spring clutches for

[1] Macniven and Cameron, Edinburgh.

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the nib also weaken it, and the annual destruction of barrels by the healthy boy is only paralleled in the profligacy of Nature. The barrel should taper towards the nib in the same manner in which a well-sharpened blacklead pencil assumes the conical form, and the junction of the two should not be abrupt or marked by any protuberance.

Avoid devices to keep ink from the fingers; the remedy is worse than the disease. A wine merchant, on hearing that the great Earl of Derby was suffering from the gout, sent him a case of sherry. The Earl replied thanking the merchant for his kindly sympathy, and said that, having tasted the sherry, he preferred the gout. Inky fingers are better to bear than teaching writing with ink-avoiding preventives. Many years ago, barrels were sold with indentations on them showing where the fingers should be placed when the pen is held correctly. But, we may ask, when is the pen held correctly? Against forcing all fingers into one position before the strokes can be made, we are passive resisters.

In a book on the art of teaching, which lies before us, no less than six series of commands are suggested to the teacher before the pupil can begin to write. As the charity boy said when he had been induced to learn the alphabet, "he did not know he had to undergo so much to learn so little." Certainly at first the fingers are held too stiffly, but this disappears with practice, and the simple rule is that the child's first and second fingers should be straight or bent slightly outwards, and never rigidly bent in. This allows for a slight motion of the pen being made without any other motion of the hand. The pen or pencil, to encourage finger movements, should be held at least one inch from the point, and should be inclined to the paper about 60°. The pupil should always be able to see the point of the pen as he writes. Perhaps some advice given for beginners may be useful here. A preliminary step to handwriting is training in making the various simple strokes which are requisite for the formation of letters. The lines and curves may be practised successively in the sand-tray, with chalk on the blackboard or on prepared walls, then with brush and pencil on a smaller scale, and finally with the pen. The "magnum bonum" (nib and barrel in one) represents the perfection of adjustment between these two parts, but the cost—almost a penny each—is against its use in school. Brass barrels are useless owing to their want of elasticity.

The third part of our pen is the holder or shaft. The quill with its close-cut feathers was an ideal holder. It was light, it tapered, it was balanced, and it was pleasantly flexible. We have now a rigid cylinder, sometimes grooved, ill balanced, and most vilely varnished. An improved shaft of cedar wood has been put upon the market, but, owing to its absorptive qualities, it soon becomes dirty. With a fine coat of varnish, these holders are sold at 4s. 3d. a gross, and this represents a substantial article at a very fair price. They are nine inches long, thus affording at least three or four chances for the boy to cut them down. Why are boys so keen about cutting their penholders to the smallest dimensions? When the youth leaves the school-desk for the counting-house, he annexes the longest pen in the office, and, pertly stuck behind the ear, it becomes a formidable weapon at close quarters.

The minimum size for a pen should be a length that will reach from the paper to half an inch above the first knuckle, *i.e.*, about four inches. Below this, a pen is impossible, and barefaced confiscation is the only remedy. Since confiscation has been broached, we had better, like Mr. Gilbert's *Mikado*, "make a list" of forms of pens which should be instantly annexed by the vigilant teacher. First and foremost, those which affectionate aunts and uncles buy at the seaside. They are made of bone, elaborately turned, pierced for the insertion of microscopic views, and finished off by a brass holder. They weigh twice as much as an ordinary pen, and this extra weight means additional fatigue, mounting up in geometrical progression as the day goes on. Secondly, those which "a double debt do pay," being a blacklead at one end and a pen at the other. In a specimen at hand, exactly six inches long, the centre of support is three and three-quarter inches from the pen end, and two and a quarter inches from the pencil end. This is all right for the pencil, but quite wrong for the pen, and most fatiguing for the pupil. The third on the list is the advertising pen. We used to confiscate an enormity with a swivel pad at the top, by which the boy could stamp his name not only on his legitimate property but on anything else, while the marking-ink lasted. The latest product of ingenuity we have acquired is a pen in which the holder is converted into a calendar. The inside is a hollow cylinder, and a cloth calendar is arranged on the same principle as a spring tape measure. Of course, the spring lasts two days in the hands of an enthusiastic boy, though the almanac is thoughtfully provided for two years. The top of the holder is a heavy ornamental screw, into which a capital portrait of our gracious King is deftly inserted. The firm, it need scarcely be said, is a foreign one.

Of fountain-pens there are two varieties. One, called stylographic, is a wire with a fine metal point; the other is a pen. The former is not suitable for boys at all; indeed, the wire presents difficulties to men; but these are beside the present question. The latter is very expensive, and so far the pen-nib supplied is better adapted to satisfy commercial than educational needs. The cheaper varieties are disastrous, as the nib soon loses its flexibility, the strokes are ragged, and the pen offers an insufficient resistance to the untrained hand. To the boy, the charm is not that he desires a ready instrument for recording his thoughts on paper, but that he can play at filling and refilling the fountain with ink by means of the suction-dropper. We have made many experiments with this pen, and so far no

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nib has come up to the standard required for the special purpose of training a boy to write.

To sum up. The holder should be about one-eighth of an ounce in weight—that is, eight pens without the nibs should balance one ounce. A simpler test is that two complete pens should balance one penny, and should measure, when placed end to end, about one foot. This represents a pen which can be used by young fingers without fatigue, is designed to teach the elements of letter-making and current writing most effectively, and serves as an excellent introduction to that later form of penmanship when it becomes such an unconscious instrument of thought that the pen may be truly said to be "mightier than the sword."

THE USE OF GASOLINE IN SCHOOL LABORATORIES.

By J. Rees Foster, B.Sc. (Wales),
Headmaster of Llanberis County School.

A SHORT description of the installation of plant for the generation of gasoline for use in the Llanberis Intermediate School appeared in *Nature* of November 9th, 1905, and appears to have interested enough readers to call for a more detailed description of apparatus, methods, and cost.

As a result of the adoption of more rational views of the place of experimental work in a secondary-school curriculum, the demand of science teachers for proper laboratories is rapidly being met by school governors. Where a town gas-supply is available, the question under discussion does not arise. But not a few schools are out of reach of coal gas, and only those who have attempted to organise school courses in chemistry and physics without it can fully realise how dependent upon it we have become.

It is now more than five years since the question presented itself in all its difficulty at Llanberis, and when additional laboratory accommodation had to be provided a practical solution of the difficulty was imperative.

If coal gas is not available, the choice seems to lie between acetylene and gasoline. The former has apparently been successfully adopted in one school at least, and an account will be found in The School World for January, 1902, of its use in the laboratories of Felsted School. That it is a valuable substitute where great heat is necessary is clear from that article, and the writer goes so far as to say that "the laboratory would not now make an exchange in favour of coal gas." Gasoline, on the other hand, as far as could be ascertained, had not been successfully employed in this country, though it has been used for various purposes in America for many years. The first gasoline machine of which particulars were obtained involved the use of a heating stove to assist evaporation, and was rejected on the ground that the risk of explosion was too great; but further inquiries showed that gasoline could be successfully manipulated without this serious drawback. Estimates were obtained for acetylene and for gasoline. The chief object was to provide heating burners for the chemical and physical laboratories, and a secondary object was to light the school buildings.

For purposes of comparison, the following details may be given. Provision had to be made for about fifty Bunsen burners and about the same number of illuminating burners. The conditions laid down were, that the plant should provide sufficient gas for either of these sets of burners singly, but would not be called on to meet the demands of the laboratories and supply light for the whole building at the same time. The question of expense had to be considered seriously in the choice of the system. The tender of a firm of acetylene gas engineers, which had already done similar work, was rather more than £186, including all gasfitters' work. A tender for gasoline plant, including all special burners, was £62. A separate tender for piping and gasfitters' work, to be done locally, was £70. Thus the capital outlay was 40 per cent. higher for acetylene. To make the inquiry complete, a rough estimate was also obtained of the probable cost of connecting the school up to the nearest coal-gas supply, and the cost of laying mains alone worked out at about £400. The still more important question of cost of maintenance could not so easily be found, and the writer had no means of experimentally comparing the actual cost of the two systems. There, however, seemed no reason to doubt the estimate that one gallon of gasoline is equivalent to fourteen pounds of carbide as a source of gas giving equal illumination. With gasoline at 1s. 6d. a gallon, this works out at about half the cost of acetylene, and, as will be shown later, gasoline involves far less time and trouble in manipulation. This great advantage in the matter of cost, and the knowledge that gasoline was an efficient substitute for coal gas for laboratory purposes, decided the question in its favour.

The machine was supplied by The Walworth Manufacturing Company, of Boston, Mass., and with it were supplied all special fittings, including illuminating and Bunsen burners. A local gasfitter supplied all necessary piping, and set up the machine without any difficulty under the supervision of the writer.

The method of generation consists simply in driving air over the surface of the gasoline in a tank, and is carried out in practice as follows:—A large shallow cylindrical tank of copper, C (Fig. 1), about six or seven feet in diameter and about a foot deep, and holding about 250 gallons, is buried in the ground some twenty or thirty feet from the building. Three openings are provided in the top of this tank. Into one is screwed a vertical two-inch pipe, B, opening at the surface of the ground, and fitted with a gas-tight screw cap, through which pipe the tank is filled with gasoline. From the other openings are carried,

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underground, two horizontal pipes to the gas-house, which may be a small cellar or other convenient place in the basement of the building. One of these is an inlet pipe, D, and the other an outlet pipe, E. In the gas-house is placed the air-pump, J, which, filled with water to the level S,

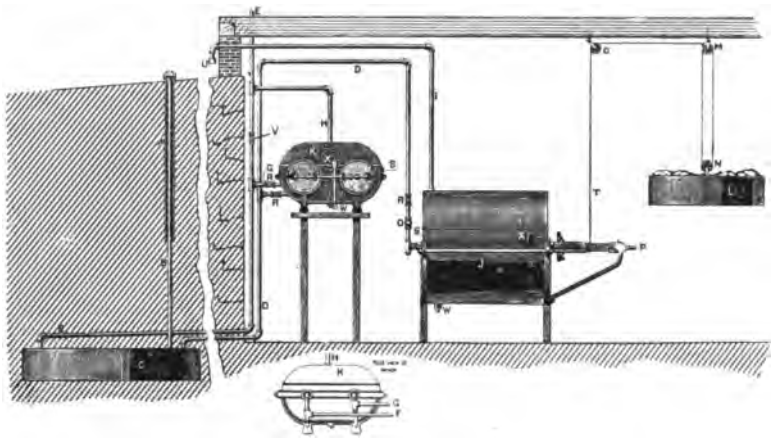

Fig. 1.—General Arrangement of the Walworth Gas Machine and Mixer.

A, 3″ sleeve with cap covering B; B, fill pipe to C; C, generator; D, air from J to C; E, gas to house system from C; F, air from J to K; G, gas from C to K; H, mixed air and gas from K to house system; I, air induction to J; J, air pump; K, mixer; L, weight pan—power for J; M, 4 sheave pulley—top; N, 4 sheave pulley—bottom; O, single pulley: P, crank shaft—for winding; Q, check valve; R, cock; S, water line; T, wire cable holding L; U, strainer for induction I; X, filling plugs; W, draw-off plugs.

sucks air through I, and drives it through the pipe D, on to the surface of the gasoline in the tank, C. This causes rapid evaporation, and a mixture of gasoline vapour and air is driven out through the pipe E. It is clear that the "richness" of the mixture arriving from the tank will vary according to the amount of gasoline in the tank, and at first, when it is nearly full, this mixture will be much too rich to burn. The cock, V, is shut, and the mixture passed through G into the mixer, K, which consists of two parallel horizontal revolving cylinders, and is filled with water to the level S. The rear view of the mixer shows the two inlet pipes, F and G, opening into the two cylinders. Into one cylinder the mixture of air and vapour from the tank is admitted through G, and into the other cylinder, air from the pump through the pipe F, branching off the pipe D. The pressure from the pump causes the cylinders to revolve, and the relative amounts of air through F and mixed air and vapour through G depend on the rate of revolution of these cylinders respectively. The rate of revolution is regulated by the positions of two movable toothed wheels on a horizontal rod passing across the faces of two vertical metal discs. The discs carry a series of concentric pegs, which engage the toothed wheels, and by a very simple adjustment of the positions of the wheels on the rod the rates of revolution of the cylinders attached to the discs can be regulated as desired. Thus any required amount of air can be added to the mixture of vapour and air which arrives from C, until a final mixture is obtained which yields the best results on burning. This contains about 15 per cent. of gasoline vapour to 85 per cent. of air, but varies somewhat according to the use to which it is to be put, and the kind of burner employed.

The mixer once set does not require any attention for weeks. The outlet-pipe, H, from the mixer leads into the house system. It is, of course, necessary, when the installation is first started, to drive the air out of the pipes before lighting the gas at the burners. As soon as the gas begins to burn with a poor and blue flame, the amount of air admitted into the mixer is decreased by the simple adjustment described.

The construction of the Bunsen burner will be easily understood by reference to Fig. 2. The burner differs from the ordinary coal-gas Bunsen in the possession of a screw plug fitting into the bottom of the burner and worked by a milled head. By screwing this up, the point of the plug gradually closes the small hole through which the gas enters the vertical tube of the burner. This tube carries at its lowest end a number of air-holes arranged in a ring round a collar screwing on to the lower part of the burner. By unscrewing this tube, the amount of air admitted can be much more delicately adjusted than with the ordinary form of burner. The combination of these two adjustments allows of the formation of a non-luminous flame of any size required, without causing the flame to burn at the foot of the tube. These burners give excellent results, the non-luminous flame being as nearly like that of a coal-gas Bunsen as possible. They do not choke up or require periodic cleaning. All the ordinary modifications supplied for coal-gas Bunsens, such as the rose burner, flat-flame burner, rings, &c., usually fitted as tops for special purposes, can be used equally well with the gasoline burner. The blowpipe as supplied for coal gas requires a slight modification, necessitated by the fact that the gasoline flame is more easily blown out. The nozzle of the air blast,

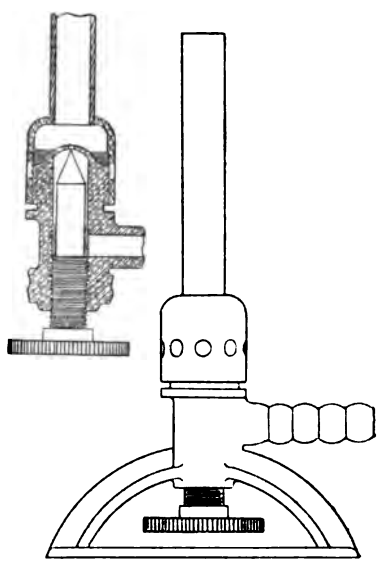

Fig. 2.

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instead of terminating just inside the open end of the blowpipe, is carried about one-eighth inch beyond it. It is then impossible to blow the flame out by any pressure from the foot-bellows, and the blowpipe completely satisfies all demands made on it. Where a large amount of blowpipe work is done, it is worth while to carry a separate air-pipe from the pump to the blowpipe table, and do away altogether with the foot-bellows. This is done in works where blast-burners are in constant use.

For illumination, specially constructed burners give better results than coal-gas burners, though the latter give quite satisfactory light. It is of course obvious, from what has been said about Bunsen burners, that incandescent mantles are available for use with gasoline, and the results are as highly satisfactory as with coal gas. Speaking generally, gasoline is as satisfactory a laboratory agent and as good an illuminant as good city gas, and far better than that usually supplied to small towns. It is cleaner, and not much more expensive.

It remains to describe the attention required by the machine, and herein lies one of its greatest advantages over other systems of private gas-supply. The whole apparatus is extremely simple, and the amount of attention required very slight. The weight has to be wound up once a day or once every other day—an operation that takes about two or three minutes. The mixer has occasionally to be adjusted—an even simpler matter than winding up the weight. The filling of the tank is the only serious operation, and the frequency depends clearly on its capacity in relation to the demands made on the supply. One tankful lasts from one to two years. By placing stopcocks on the pipes D and E, outside the building, the tank can be shut off from the house and opened without causing any waste due to back pressure from the pump. The gasoline is poured into the tank, and the whole operation completed in a couple of hours, care being taken not to fill the tank too full. The water-levels in the pump and mixer should be carefully adjusted, but require no further attention. Gasoline is a mixture of the lower-boiling-point hydrocarbons forming petroleum, and is supplied by the American oil companies in this country at 1s. 5d. or 1s. 6d. a gallon. Only the best should be used, which boils between 35° C. and 70° C., and has a specific gravity of about 0·63. It completely evaporates, leaving no residue, so that the tank requires no cleaning out, and, as the whole of one consignment can be emptied into the tank, none need be stored.

The "A.L." Smoking Chart. 35in. by 45in. (Leeds: Arnold.) 5s.—To those who are convinced that the evils of juvenile smoking can scarcely be overrated, this chart will be welcome. It sets forth in simple and concise language the injurious effects of nicotine on the blood, nerves, heart, digestive organs, &c. Some of the statements will, we imagine, make boys wonder that so many confirmed smokers survive to tell the tale.

THE PRODUCTION OF ARTIFICIAL SPEECH SOUNDS.

By Prof. Walter Rippmann, M.A.

Ever since the talking machine was invented the idea of utilising it for language teaching must have presented itself. This idea sometimes assumed grotesque forms; it was suggested that language teachers had better look out for some other employment, as the machine was going to take their place.

Vague speculation was followed by experiment, and as a result we have gradually arrived at a more just estimate of what we may expect from a phonograph and from its more recent rival, the Gramophone.[1]

It is some five years since I began making records with the phonograph. My first attempts were only partially successful. I gradually became accustomed to the peculiar phonograph *timbre*, until I seemed to hear a voice which was faint indeed, but tolerably natural. Others whose ear was less familiar with the machine were not much impressed, and for a time I ceased to experiment, as I believed that there was something imperfect either in my voice or my method of reproduction.

Then some records were advertised by the Modern Language Press and submitted to me. They had evidently been spoken very rapidly, so as to get on to the record as much as was possible of the text occurring in the book. The result was intensely irritating to the nerves. They confirmed me in my belief that many improvements would have to be effected before the phonograph could be introduced into the class-room with advantage.

Over two years ago I was approached by the directors of the Gramophone and Typewriter Limited, and willingly accepted their suggestion that I should make a series of experiments in their laboratory, before expressing an opinion as to the educational value of their instruments. It may be of interest to explain briefly the difference between a phonograph and the Gramophone.

The general principle is the same. The waves of sound set up by a musical instrument or the singing or speaking voice cause vibrations in a sound-box, and these are communicated, by means of a sharp point, to a special kind of wax. This is in the shape of a cylinder in the phonograph, and the blank record is placed on a cylinder, which revolves from 120 to 150 times a minute, while the point travels slowly from left to right. In the case of the Gramophone, the material on which the sound-waves are inscribed is in the form of a disc, revolving at the rate of about 70 revolutions a minute. The point starts near the edge, and travels in an ever diminishing spiral towards the centre.

The vibrations produce "up and down" impressions in the phonograph record—a series of

[1] The Gramophone is selected as the best representative of talking machines with records in the shape of discs, for which there is no generic term.

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tiny hills and valleys; in the Gramophone record the vibrations are lateral, that is, the reproducing needle vibrates from side to side.

The phonograph record can be heard as soon as it is made if, in place of the recording point, a sound-box is attached, in which there is a hard and comparatively blunt point. The cylinder revolves again at the same speed, the point travels over the hills and valleys, vibrations are set up in consequence, and these produce a series of sounds like those originally uttered, only fainter, and with certain changes, which give what I have called the phonograph *timbre*. When the original sounds were very powerful, the *timbre* is not marked; in records of speech, where the volume of sound is not great, this *timbre* is disturbing. I have heard no speech records in which it was absent.

For commercial purposes, the "master record," *i.e.* the original record, has to be reproduced in large quantities. There are two ways of doing so. One is to set the master record going, and to let the sounds so produced be recorded on a number of blanks which are, so to speak, listening to it. Now it is clear that these will be records of records, giving the original sounds in a twice-changed form. There are the *timbre* of the master record and the *timbre* of the record made from it. This process could obviously not be considered satisfactory, and further experiments were made which led to the system now in general use for multiplying records.

The wax master record is subjected to chemical treatment; metal is deposited on it, which gives a matrix from which any number of records can be cast. This shows exactly the same indentations as the master record. The "moulded" phonograph records are, consequently, much better than those produced by the older process mentioned. The process employed in the production of Gramophone records is a jealously guarded secret; but the general principles are the same. The discs as sold are of a hard black substance resembling vulcanite, and will stand any reasonable treatment.

The teacher is, of course, concerned with the practical question: Can I make any use of such instruments? If so, is it to be a phonograph or the Gramophone?

The phonograph has the obvious advantage that the student can make his own records, but this is of real value only to the trained observer. It is not enough to reproduce sounds; you must also be able to discriminate them. Just as the teacher cannot give the best help to his pupils unless he has studied the sounds of speech, so it requires a phonetic training to derive full benefit from a record of one's speech.

The obvious use of the talking machine, however, is to provide models of native and foreign speech; and it is the intonation of connected speech rather than the individual sounds that can be learnt. It is a pity that the rate of revolution cannot be diminished so that the words are produced quite slowly and the separate sounds can be studied. A reduction of speed always leads to such a lowering of pitch that the sounds become quite unnatural. But the intonation is reproduced excellently; if we wish to observe it there is no need to reduce the speed.

After hearing many records of speech on the phonograph and the Gramophone, I have no hesitation in saying that the Gramophone gives the better results. It is true that some of the "moulded" Pathé phonograph records of spoken French are very good, but even the best are not free from the peculiar *timbre* which seems inseparable from the phonograph. The Gramophone also has its drawback—the "scratch." The origin of it is still something of a mystery. In some records it is objectionable, in others hardly noticeable. Fortunately, it does not alter the voice; it is merely a kind of accompaniment. As it is a noise, and not a musical sound, it does not carry far.

When I had satisfied myself that the Gramophone deserved serious consideration as an educational appliance, I willingly agreed to make use of it. At my invitation, Mr. S. Barlet wrote a series of thirty-one dialogues dealing with French life and ways, and, after numerous experiments, a complete set of Gramophone records reproducing these dialogues has now been made. It is unnecessary to relate how many voices were tried and how often a record had to be made again because of some trifling slip. Few can have my experience in this rather tedious work.

They were almost ready when I heard of the Cambridge phonograph records. I gathered from the prospectus that the difficulties I had met with in my early attempts had been overcome, and I looked forward with genuine pleasure to hearing these records. What my feelings were when I had an opportunity of doing so I prefer not to describe. The selection of passages for reproduction had been made with such evident care that it seemed cruel that those interested had obtained no better results. That their want of success is due in large measure to the mode of reproduction there can be little doubt. The records have been taken from master records by the earlier process indicated above; an installation for "moulding" records was probably found too expensive. Whether it would not have been cheap in the long run to have the master records reproduced at the regular factory of one of the large phonograph companies is another question.

The price of the instruments and records remains to be considered. Phonographs can be had at almost any price; Gramophones are, on the whole, more expensive. The Cambridge phonograph records cost 3s. each; those issued by Pathé cost from 1s. 3d. to 5s. In the Pathé catalogue will be found a good selection of literary pieces spoken by well-known French actors and actresses. The ten-inch Gramophone records cost 5s. each. The thirty-one dialogues will be issued shortly; the book containing the text will be of interest to modern language teachers. There are also some good Gramophone records of La Fon-

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taine's fables (spoken by Delaunay), of passages from classical German plays, and of well-known songs. It is much to be desired that the number of Gramophone records suitable for educational purposes should be largely increased.

That the recital of passages of literary value by a recognised artist in speech, if well reproduced by such a machine, is likely to prove a valuable stimulus in the class-room cannot be doubted. The same machine which is used in the French or German class will serve the teacher of English elocution; it can also be utilised in the singing lesson, and can supply the accompaniment for musical drill.

The more teachers show interest in these instruments, the more likely those commercially interested will be to improve them, so that they may give still better reproductions of the spoken voice, and to increase the number of the records, so that we may have at our disposal a rich *répertoire*.

MANUAL INSTRUCTION IN BOYS' SECONDARY SCHOOLS.[1]

By W. A. Knight,
Sexey's Trade School, Bruton.

III.—Metal-work.

WORKING in metal follows on naturally from woodwork, and is so interesting to boys that it is strange how seldom it is introduced into the upper forms of English secondary schools. It would be difficult to produce good work in metal without a previous training in the use of tools, but, given this early training, it is surprising how rapidly boys become accustomed to work with heavier tools and materials. In the greater part of the work it will be necessary and desirable to aim at a much higher standard of accuracy than in woodwork.

To keep a boy too long at operations like filing and chipping would be to deprive the work of interest, and there is no reason why he should be restricted to iron as a material. Forging is difficult, but is worth the trouble involved. Soldering is the "dream" of the average boy of a mechanical turn of mind, and might as well be properly taught; it opens up an enticing prospect in the school where physical apparatus has to be made or repaired.

The classes will probably be smaller, but rather more floor-space per pupil is required than in woodwork.

A continuous 3in. bench, 2ft. 6in. high, 2ft. wide, should run round three sides of the shop, with small vices and anvils combined fixed 4ft. apart, and a drawer under each bench-place. If there is a paved floor, the very necessary rigidity can be obtained by screwing the benches to light iron standards of T-section, let into the floor. A good space should be reserved for a teacher's bench-place, provided with a larger vice, and sets of drawers and cupboards below. A strong drilling-machine can be fixed at any convenient bench-end. The sets of tools are best arranged on a rack running round the walls above the benches, the general tools being in the teacher's care.

Two small forges are better than one large one, and should be placed against one wall, with a large anvil conveniently near each. A grindstone (which can also be used for grinding the woodwork tools), a set of stocks and dies from ¼in. up to ½in., a supply of coarse and fine files, soldering irons, shears for metal-plate, pliers of various kinds, and two sets of forging tools are all indispensable.

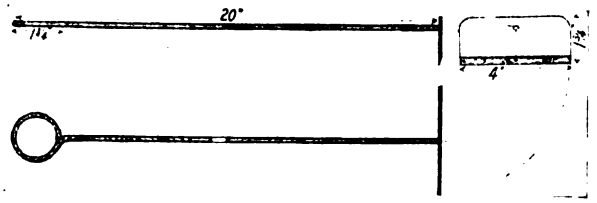

Fig. 1.—Model No. 5. Stove Rake (Iron).

It will be found necessary to modify the class-system of teaching in some parts of the course, *e.g.* in forging. After the teacher has demonstrated, the boys should take it in turns to practise the operation on a spare piece of rod, one boy at each forge, while the others are working at some other model not requiring the forge or anvil. The boy should not be allowed to begin his model until he is fairly proficient in the exercise which it involves. When the class has made some progress in the course, and the danger of ruining the tools and of wasting material is reduced, the making of simple pieces of physical apparatus can be suggested as a suitable occupation on wet half-holidays. The minor repairs of a bicycle can also be "tackled" by the best

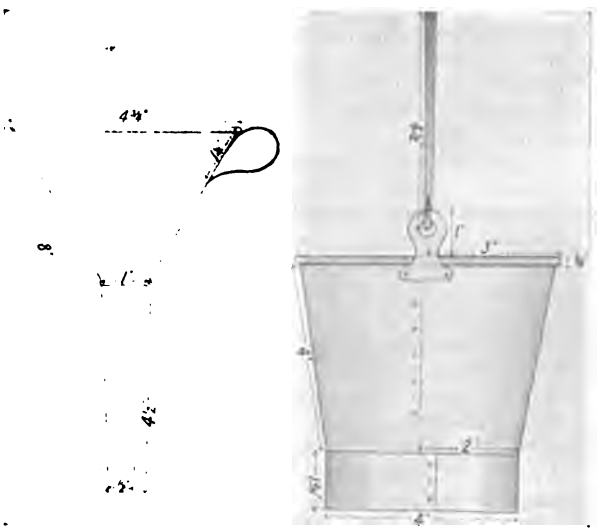

Fig. 2.—Models 9 and 10. Funnel (Tin) and Bucket (Sheet Iron).

[1] The second article appeared in March, 1906.

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boys. After the first year, such tools as the square, chisels, &c., will be made in the shop.

In the following suggested course the models have been chosen solely with a view to illustrate the exercises. The latter are the "essentials," and *must be graded carefully in difficulty*. No two teachers will agree as to the actual order, and many will be able to suggest other, and possibly better, models. The idea of framing an "engineering" course has been studiously avoided; the cost would be very much greater, and, in the writer's opinion, the use of machine tools does not give the desired training of hand and eye; the proper place for such a course is not the school, but the technical college.

List of Tools recommended.

	£	s.	d.
Calipers, "in" and "out," 5in. ...			10
Cross-pane hammer, ½lb.		1	0
Cross-cut chisel			9
Straight chisel			9
Compasses			8
Brass scriber			3
Steel scriber			3
File, 10in., middle cut, flat float ...		1	0
File, 10in., bastard			10
Try square, 5in.		1	6
Steel rule, single		1	0
Tinman's mallet		1	0
Cheney anvil and vice, No. 30, 3¾in. jaws	1	0	0
One set for each bench-place at	£1	9	10

Tools for General Use.

	£	s.	d.
2 pairs round-nosed pliers		1	6
3 pairs cutting bell pliers, 6in.		6	0
2 hacksaws		8	0
1 round B.W. gauge, 1 to 26		6	0
1 oilcan, ½-pint		1	0
2 tinman's shears, 10in.		6	0
1 rule-joint compass, 8in.		1	0
4 cast-steel round punches		1	4
3 cast-steel square rimers		1	0
2 soldering irons, ½lb.		5	0
3 rivet sets		3	0
1 beak iron, 18lb. at 1s. 4d.	1	4	0
1 crease iron, 7lb. at 1s. 6d.		10	6
1 funnel stake		6	6
1 hatchet stake		9	0
1 paning hammer		1	0
2 portable forges, with bellows (or American, with fan)	10	0	0
6 forge tongs, various		12	0
2 C.S. 4lb. anvil hammers		4	6
2 each rake, poker, brush and slice ...		12	0
1 drilling machine to fix on bench, and set of drills, ⅛in. to ¾in.	1	13	0
1 fitter's parallel "lightning" vice, 4in. jaws	1	12	0
1 set stocks and dies, ¼in. to ½in. ...	1	10	0
1 leg vice, 4in. jaws	1	2	0
	£21	16	4

A quantity of materials for a year to supply two classes of twelve each would be as follows for the course suggested:—

14lb. hoop steel, ⅛in.; 1 bar cast steel, ⅝in. hexagon; 1 bar flat steel, 1½in. × ¼in.; 1ft. plate steel, ⅛in.; 1 sheet steel, 16 gauge; 1 sheet iron, 24 gauge; 4lb. No. 4 iron wire; 2lb. various iron wire; 2 round iron rods, ¼in.; 1 bar iron, 2¼in. × ⅜in.; 1 round iron rod, ½in.; 1 round iron rod, ⅜in.; ½ sheet zinc, No. 10; ¼ sheet brass, No. 16; 1 sheet copper, No. 24; 2lb. brass wire, No. 9; 2 sheets tin, xx (charcoal); 3 cwt. smith's coal; 1 bar iron, ½in. × ⅜in.

The total cost should not exceed £3.

Suggested Two-Years' Course in Metal-Work.

A.—List of Exercises.

1. Gauging B.W.G. 2. Bending, twisting, and cutting wire. 3. Filing. 4. Cutting with chisel. 5. Scribing. 6. Cutting with shears. 7. Drilling. 8. Soldering. 9. Brazing. 10. Forging—(*a*) drawing and pointing, (*b*) bending at red heat. 11. Punching, riveting, and clinching. 12. Seaming. 13. Annealing. 14. Tempering. 15. Bending sheet steel. 16. Sawing iron and steel. 17. Screw-cutting (stocks and dies). 18 and 19. Upsetting and welding.

B.—List of Models.

1. Crucible triangle (iron wire and clay pipes). 2. Brass scriber (brass wire, No. 9). 3. Gardener's label (zinc). 4. Set squares (brass). 5. Round sponge-box (zinc). 6. Surveyor's arrow (iron ¼in. rod). 7. Boy's hoop-crook with brazed ferrule (iron wire, No. 4). 8. Fencing staple (iron wire, No. 4). 9. Funnel and handle (tin). 10. Small bucket (sheet iron). 11. Stove rake (iron). 12. Calorimeter (copper). 13. Engineer's straight-edge (hoop steel). 14. Specimens of tempered steel (steel). 15. Nut gauge (sheet steel). 16. Hard chisels, chipping and cross-cut (cast steel). 17. Mincing knife (sheet steel). 18. Plumber's hook (plate steel). 19. Garden trowel (sheet steel). 20. Try square (iron and steel). 21. Calipers, inside and out (sheet steel). 22. Letter-weight (iron). 23. Bolt, nuts, and washers (iron). 24. Door-handle (iron). 25. Retort stand (iron).

Secondary Education and the Proposed Imperial College of Applied Science.

By J. H. Reynolds, M.Sc.

Principal of the Manchester Municipal School of Technology.

The final Report of the Departmental Committee on the Royal College of Science is a document of high importance, quite irrespective of and even transcending its immediate purpose, which is to establish the position that there should be founded in London an institution comparable with the great Technical High School of Charlottenburg.

Referring to the institutions of which this eminent school is regarded as the type, the Report states that, "taken as a whole, they are

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the outcome of conditions which do not obtain in this country, and the system which they embody is not one which could with advantage be reproduced in its entirety." The conspicuous service which these schools and the great universities, at the hands of scientific teachers of the highest eminence, have rendered to the German nation, converting her from an agricultural and importing country into a formidable manufacturing and exporting nation, is well exemplified by the classical illustration given in the Report of the rise and development in Germany of the chemical industry. The annual value of the products of this industry during the last thirty years "has risen from a quite insignificant amount to the sum of £50,000,000 sterling," and the achievements in the field of applied chemistry have encouraged a like development in the practical teaching of physics with a view to the encouragement of the electrical engineering industry in which also Germany has become a most formidable competitor of this country.

In what respect, we may well inquire, is the system which has led to these results one which could not with advantage be introduced into this country? Are there in Germany, apart from compulsory military service, some peculiarity of tradition, some special national characteristic, or set of circumstances altogether foreign to us as a nation, which make the system inapplicable? The Report gives no indication of this: on the contrary, it proceeds to show that the success which has attended the teaching of science as applied to industrial pursuits in the technical high schools and universities of Germany is due, presumably, to the high quality of the preliminary training required of students before they can be admitted to these institutions. They must, in short, "give evidence of having satisfactorily passed through a nine-years' course of secondary education." "It is only on such a broad foundation of general knowledge," the Report goes on to say, "that it is considered that a student can benefit by the higher scientific training which is regarded in Germany as being essential to the development of her industries." It is upon her gymnasia, "with their predominant classical and literary curriculum," which many regard as the most satisfactory training, and upon the *Realgymnasia* and the *Oberrealschulen* (neither of which classes of secondary schools attempts specialisation for any occupation), that the universities and the technical high schools rely for efficient students for their courses in applied science.

Not until a thoroughly good foundation of general education has been laid is it deemed proper for a student to undertake any specialised study and research in the higher branches of scientific knowledge in its application to industry. These courses of preparation in the secondary grade of education occupy nine years, and are followed by four years' specialised instruction in the technical high schools or in the universities. It is difficult to see that there is anything in these requirements "which could not with advantage be reproduced" in this country. Indeed, it is surely plain that if the success which has attended the teaching of applied science in the technical high schools and in the universities of Germany, and has brought about so great an industrial revolution in that country in the short space of a generation, is to be realised here, it must be done by the adoption of a similar policy.

At a later stage of the Report, referring to the previous statement as to the unsuitability of the German system for adoption in this country, the Committee goes on to say that, however admirable in themselves, there are certain elements in the system which cannot be reproduced here. It then makes the astonishing but by no means unexpected confession that "we cannot require at present, as a condition of admission to our higher technical colleges, the same standard of general education as in Germany," for "such a requirement might seriously restrict the number of students"!

Nevertheless, in spite of this admitted unpreparedness, this paucity of knowledge and training on the part of English students, it is insisted that the country is in urgent need of a greatly increased provision for education of a university grade in the sciences applicable to industry, and of an education "advancing to the highest planes of specialisation and research." How is it possible to secure this, except by accepting the principles and following the methods adopted in Germany and not less so in Switzerland? They simply illustrate the contention that you cannot build with sureness except upon an adequate foundation. If there be no broad, generous education, then, no result of high scientific industrial value in "the higher planes of specialisation and research" can be expected or attained.

The Report clearly shows in many paragraphs that it is to this preparedness for liberal studies that Germany owes her unparalleled advance as an industrial and commercial nation, that it is to this perfecting of men rather than of machines that her success is due, that it is by education, and education alone, combined with a rare discipline and much sacrifice of immediate gain, that the nation, unaided by natural advantages or material resources, has advanced from an agricultural to a commercial and industrial position of the first rank. It is gravely urged in this Report that, although we cannot require at present the same standard of education as in Germany, "because we cannot instantaneously compel ourselves to feel the German love of education for its own sake," although we cannot imitate the uniformity, thoroughness, and simplicity of the German standard, we can at least do one thing—we can make "greatly increased provision for education in the sciences applicable to industry of a university grade and type." Surely this is a perverse view of the question—is, indeed, an anti-climax. It is not difficult to show that the means of high-class training in the application of science to industry, and in scientific research in relation to industrial problems, are already provided far

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in excess of the requirements of the number of students properly qualified to take advantage of it.

In the Royal College of Science, in the Central Technical College, which is closely allied with it, in the University of Cambridge, in the Universities of Glasgow and Edinburgh, in the Universities of Liverpool, Manchester (with which is now associated the Municipal School of Technology with its wealth of fine equipment), Leeds, Sheffield, Nottingham, Birmingham, and Durham, and in others that might be named, there already exist, having regard to the high qualifications of the staffs and the character of the equipment, abundant facilities for thorough technical and scientific training for all the students really fit to receive it. What, then, is our real need if we are, in the quaint phraseology of one of the oldest of the treatises in the language on technical training, published at the end of the seventeenth century, "to beat the Dutch without fighting"? There cannot be a doubt that it is the effective organisation of our secondary education so as to bring it within measurable distance of the advance attained by our foreign competitors; it is the inauguration of a missionary effort to induce in the English people a firm belief in the efficacy of education as the most indefeasible of our national assets; it is to bring about a reform in our public schools, so as to fit the *élite* of the nation of all ranks to enter upon the study of science, in all its bearings upon the industrial well-being of the nation, in institutions of the highest character and quality in respect of staff and equipment; and, finally, it is to awaken in employers a keener appreciation of the value of men trained in the methods of science, who are at the same time fully abreast of the latest fruits of scientific research.

Those who are familiar with the standards of entrance to our advanced schools and colleges of science know only too well how low are the standards of admission. Whatever may be the "face" requirements of matriculation, the actual marks required for a pass are extremely low, necessarily so in the present state of our secondary education. It is further well established that the average time actually spent in the secondary schools is not much, if any, more than a third of that required in German and Swiss schools of similar rank—in short, either the pupils go in too late, or they finish too early. In any event, they leave without an adequate training, alike in respect of both time spent and subjects studied. Moreover, the age of admission to our universities and specialised schools of applied science is two years below that of similar institutions on the Continent. In these circumstances, how is it possible that the output, in respect of the quality of the students, can rival that of foreign institutions?

The divorce so marked in this country between the industries and the leaders of scientific investigation contrasts seriously with the close association of manufacturers and scientific men abroad. An instance from the great Paris Exhibition of 1900 will suffice to illustrate this. There was a large and remarkable display of scientific apparatus, the result of a combination of all the German firms engaged in their manufacture. The exhibit was placed in charge of three scientific technical experts, who undertook to show and to explain any piece of apparatus to inquirers. A voluminous catalogue in German, French, and English was issued, and in the introduction it was stated with emphasis and appreciation that the remarkable advance in this industry was due in very large measure to the close association of the manufacturers with the scientific staffs of the universities and technical high schools.

The Act of 1889, giving power to local authorities to establish schools for the promotion of scientific and technical training—the subsequent Act of 1890, which placed Imperial funds at their disposal for this purpose—the unifying character of the Education Act of 1902—have greatly contributed, especially the two former, to bring into existence a large number of technical institutions, some of the first rank, and to assist and develop others already engaged in the work of scientific training for industrial pursuits. These institutions exist mainly in the great centres of manufacturing industry, and many of them make special efforts in respect of their teaching power and the unique character of their equipment to supply the highest grade of instruction for the industries peculiar to their district—as, for example, marine engineering in Glasgow; the textile industries, engineering, and applied chemistry in Leeds and Manchester; iron and steel manufacture in Sheffield; metallurgy and engineering in Birmingham.

Much is said in the Report on the value of research, of the extent to which it is carried on in Continental and American schools and colleges, and of the greater supply of teaching power in these institutions especially in this regard. What, then, would be more fitting or of more service to the industries of the country than for the Government to increase the supply, and improve, where needful, the quality of the professorial staffs in the schools and colleges named? There could hardly be a more justifiable expenditure of the public money. Most of these institutions are exceedingly well equipped with laboratories and appliances, and only need additions to their teaching staffs for the purposes of research to produce results of the highest value to the industries of the country. Further, it cannot be other than an advantage to associate closely with the chief industries of a district the highest means of scientific industrial training, and thus bring the manufacturers into immediate relation with it. The teaching and its commercial applications would react beneficially upon each other, and make it much more easy for the best students to enter into active industrial life.

Our most pressing needs, then, are, first, the better organisation of the means of liberal training, so as to secure a larger supply of properly prepared students for the universities and technical schools and colleges, without which supply

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it is futile to increase the number of these institutions; next, to take steps to induce the English public to make, on behalf of their sons, the sacrifices which, it would appear, the German and the Swiss people are ready and eager to make in order that they may come into effective rivalry with the industrial and commercial eminence of this country—an eminence won under conditions which no longer obtain to the same extent as formerly, and cannot be retained unless the highest training in science is available to those engaged in the management and development of our industries.

SCHOOL MUSEUMS.[1]

By ERNEST E. UNWIN, B.Sc.
Assistant in Nature-study at the University of Leeds.

IT was in the Headmaster's sanctum that I was introduced to Mr. X, the master in charge of the museum at a large boarding-school that I was visiting.

"Go with Mr. X," said the Head; "he knows far more about the museum than I do, and is always delighted to show it to anyone interested in the subject."

I followed my guide across the small piece of playground that separated the museum from the main school block. We entered a building that conformed to none of my preconceived ideas of a school museum—I did not see a dark room, crowded to its utmost capacity with a mixed medley of objects from a frog in spirit to a carved cocoanut; there was nothing of the musty smell of badly preserved or mouldy carcases, but instead a lofty, bare-looking room lighted by a splendid skylight and large side windows. The middle of the room was arranged so that a class could be held there or a lecture given, and at the far end a blackboard could be adjusted for use and a lantern screen let down. Doubtless the nature-study classes and the natural history and other club meetings were held here.

Round the sides of the room partitions jutted out, dividing the space into a number of compartments. The compartments were the various departments of the museum, and were labelled INSECTS, GENERAL ZOOLOGY, BOTANY, GEOLOGY, ARCHÆOLOGY AND TOPOGRAPHY, and SPECIAL MUSEUM.

Running round the room above the partitions was a kind of gallery. Further speculation was stopped by a voice close to me. "Well, what do you think of it?" Mr. X had been watching my glances of surprise and wonder with considerable amusement.

"Your museum doesn't seem to contain very much," I blurted out.

"Oh, no!" he replied, "we don't pretend to rival South Kensington or the Hope Collection; our aim is quite a different one, and we build our museum accordingly."

"What is your idea of a school museum?" I asked.

"A school museum should be mainly—I would almost say entirely—a local museum, a reflection of school interests, and dealing with the life found in the country around the school.

"Then I consider—and this is most important—that a school museum should be an ever-living and ever-growing organism. If once the museum becomes complete and ceases to grow the whole value of it goes, and, indeed, the whole object of a school museum is lost. So, glancing round the various departments, you will not see a 'museum'—as that term is generally understood—you will not see a complete storehouse of objects, but an incomplete, growing, living school museum.

"For instance, come and look at the INSECT department. There, you see, is a chart being made by two or three boys who have taken up the work of noting the habitat of the commoner insects. The work requires considerable observation and knowledge, and is carried on without killing a single specimen.

"Then there are others studying the bees of the neighbourhood. Those specimens are the work of one boy; others are busy with pencil and camera, and much very interesting and useful work has been done. A few have been studying the life-histories of leaf-mining insects, especially those that attack plants of economic value, such as the mangold-fly. Some interesting experiments have been tried, in conjunction with the neighbouring farmers, as to the best means of destroying this and other pests. Aquatic insects, of course, have furnished plenty of work.

"We encourage drawing in line and colour, photography in every branch, and discourage mere collecting. But we realise that among the younger children collecting is their chief work; it can, however, be kept within useful limits.

"It is a crime, and should be everywhere, to bring in any rare specimen, either of animal or plant."

"A museum," I ventured, "is always looked upon as a huge storehouse where you can see examples of all kinds of things, where specimens can be named and objects identified."

"A complete museum," he answered, "is suitable for experts and advanced students only, and we do not number either of those among our children. However, come upstairs, and I will show you our 'Reference Gallery.' I'm afraid," added my guide, as we were going up the stairs, "that the majority of people would say that this was our proper museum, and would wonder why we pack it away up here and keep it comparatively private."

I found that the gallery, which I had already noticed, contained insect-cases, cases of stuffed birds, a shell collection, an herbarium, maps geological and topographical, larger specimens, including skeletons of the commoner animals, historical objects, and, down one side, the wall was divided into vertical divisions representing millions of years of geological time, an attempt to reproduce on a small scale Dr. Hutchinson's idea of the "Space-for-Time" system, illustrated by typical fossils of each period.

"We consider that only a limited number can really use such a collection as this, and even then the value is of quite second-rate importance; we therefore keep it apart from our school museum proper.

"Such a gallery as this serves another purpose. Objects prepared for the school museum downstairs can be bought for this collection; in that way this part is getting more and more complete by the addition of new specimens and the replacing of poor ones. But the more complete it becomes, the less use will it be to the ordinary boy or girl."

"You said just now that a school museum should be ever growing; how can that be?"

"Well, you must remember that this collection up here is not our school museum. This 'Reference Gallery' will necessarily become more and more complete, more and more dead, as time goes on; but the museum downstairs is a *living thing*, it will *never* be finished, it is always being started afresh. A bonfire now and then easily gets rid of much material that has fulfilled its purpose and is encumbering the ground. A periodic clearance is needed

[1] A paper read at the annual conference of the Friends' Guild of Teachers, held in Dublin, January, 1906.

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to make way for the fresh endeavours of fresh children. It is the work put into the museum, and not necessarily the museum itself, that is of value. A well-known professor has said: 'Admiration of other people's work soon ceases to stimulate,' whereas what is more stimulating to a boy or girl than to help build up a school museum?"

We had come downstairs again by this time, and my attention was directed to the department marked SPECIAL MUSEUM.

"What is your SPECIAL MUSEUM for?" I asked.

"Oh, very frequently in the course of our nature-work—in the history, literature, or chemistry classes—some subject of special interest comes up. We then set to work to make a little special museum dealing with that subject. Of course it is merely a temporary collection, sometimes lasting a term, often less.

"Last term, 'Protective Colouration' was the subject. The children were very keen about it, and several very interesting examples were brought in.

"This did the children far more good than if we had had a beautifully set-up case of specimens, both British and foreign, for them to see any day of the week. It is *after* they have built their own museum on 'Protective Colouring' that a visit to such a place as South Kensington to see the beautiful cases in the large entrance hall would be of value.

"'Moorland plants,' 'Seashore burrowers and borers,' 'Simple apparatus, physical and chemical,' 'Saltmarsh flora,' and 'Old costumes of the people,' are a few of the subjects that the SPECIAL MUSEUM has dealt with. In the case of literary or historical subjects, drawings and old prints form the chief part of the show.

"This term we are collecting evidences of prehistoric man, and before long we hope to have a good show of arrow-heads, pottery, and other cave deposits—mostly borrowed—as well as drawings illustrative of the subject.

"Then you must see our Vivarium."

I had already noticed several small aquaria on the window-ledges in the zoological departments, but I was hardly prepared for the grand display in a little, very airy, and well-lighted room into which Mr. X took me.

Here were two large aquaria and a host of smaller ones in which all kinds of aquatic animals and plants were living.

On the shelves round the room was a number of well-stocked breeding-cages, boxes of seedlings, and one or two spacious cages for pets—guinea-pigs, mice, a hedgehog, land-snails, frogs and toads, all looking very happy and all very clean.

"We believe," answered Mr. X, in reply to my questions, "that this is one of the essentials of a successful school museum. A vivarium keeps before the children the most important fact that they are dealing with living things, and that most of the interest is lost as soon as the plants become hay and the animals mummies."

There was another small room into which I was taken; this was the work or preparation room. But just then Mr. X was called away to some duty, and I continued my observations alone.

There was a bench for rough work, such as skinning or modelling, a large saucepan for preparation of skeletons, and a small bench with a set of tools for any little woodwork jobs. I heard afterwards that the boys themselves had made most of the cases, shelves, and cupboards in the museum.

Then there were two large cupboards containing the stores of bottles, pins, cardboard, nets, and all the necessary things for both outdoor and indoor work. Several microscopes were kept here, and I had already seen evidences of good microscopical work.

I wandered about the museum for a time delighted with all I saw, and then examined their museum library. The books were arranged under heads and sub-heads corresponding to the departments of the museum.

Some were books of reference and had to be read in the museum, but others could be taken out for reading and study elsewhere.

Here, then, was a new type of museum, a type of which the more I saw the more I liked. An ideal school museum, nothing elaborate, everywhere the stamp of individuality, and containing unmistakable evidences of the work of a large number of girls and boys. Then my thoughts turned to the master who had been showing me round. I remembered his enthusiasm, the keen delight in his work. To make a school museum a success there must be a directing personality behind the scenes. What subject *can* do without the vivifying power of a strong teacher?

Mr. X was not afraid of a poor show, or rather what would look to an outsider to be a poor show. To one able to see behind the scenes—to appreciate the meaning of things—this museum was of far more value than the largest possible collection of odds and ends handed down from one generation to another. If the purpose of a school museum is to make a display of objects gleaned from every available source, you must give up all idea of making your school museum an educational success.

The terms "museum" and "school museum" are not interchangeable. I had not realised that until my visit to Mr. X's school museum. What is true of a large public institution which supplies the needs of a very wide circle of people is not true of a small private local school affair. The aims of a school museum and a public museum are quite different, or at least should be.

I have now given, in a very rambling way, my views as to what a school museum should be. I need hardly say that the museum referred to exists in the imagination only, although there are one or two schools here and there that attempt to carry out the main principles laid down.

A school museum is a success in so far as it fosters the independence both of thought and action in the child. It is not the museum that is important, it is not the fact that you can show rare objects of all kinds that makes a school museum a success, but it is the energy, the thought, the contrivance, the work of the children in building it up that make it invaluable.

* * * * * *

The scope of a school museum should be as wide as can be managed conveniently. Natural history subjects will more readily lend themselves, but the other subjects must not be neglected.

A school museum should belong to every section of the school. The archæologists, the entomologists, the geologists, the workshop boys, those interested in history, those clever with pen, brush, and camera, all should feel that the museum belongs to them and needs their help.

I have given in the opening paragraph or two of this paper my ideas as to convenient buildings, but this kind of a school museum can be started and carried on successfully in an ordinary schoolroom. Of course a proper building would be a great advantage, but if you wait to build it will be the millennium before some of your schools have a school museum at all.

As few restrictions as possible should be put upon the use of such a museum—let it be as free as an ordinary schoolroom. A school museum should provide a binding

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influence upon all the school societies. It should counteract any suggestion of jealousy between, say, the naturalists and the archæological boys. It should provide an underlying influence directing energies that are apt to be rather aimless into the best possible channels without taking away any spirit of freedom from those energies.

In this way many would be led to undertake some definite investigation or observation that would require thought, ingenuity, and independence to carry to a successful conclusion. I have not formulated definite plans for school museums. I believe it is as much a subject for each school to work out its own methods and details as nature-study is.

The main thoughts that I would leave with you are :—

Dispel from your minds the idea that a school museum should necessarily be a collection of all kinds of objects from all parts of the world.

Let a school museum be a "local" one.

Try to realise that it is the work done by the children that is of value.

Do not be afraid to make a bonfire now and then to clear the ground.

Be enthusiastic yourself, and soon you will have the whole school enthusiastic with you.

THE REGISTRATION OF TEACHERS.

THE report for 1905 of the Teachers' Registration Council has now been published. The total number of applications of teachers for registration up to the end of 1905 was 13,550. These applications resulted as follows :—Registered (men, 5,113 ; women, 5,346), 10,459 ; rejected, 2,849 ; withdrawn, 62 ; not dealt with, 180. During the single year 1905 applications for registration were received from 1,652 men and 1,743 women, and of these 1,483 and 1,305 respectively were registered ; while 784 applications were rejected and 24 withdrawn.

In reference to Column A, the Council repeats its opinion that the present card-register is out of date and useless as an official record of certificated teachers. Pending the decision of the Board of Education as to how the expense of the upkeep of this column is to be met, no steps have been taken to enter on the official cards the information which has been recently supplied.

The Council is agreed in considering that Column A, as established by the Order, serves no good purpose, and that the attempt to maintain it in its present form should be abandoned. It is pointed out that under existing conditions it is not practicable to frame and to publish an alphabetical register of teachers such as appears to be contemplated by the Act of 1899. This defect prevents the use of the register as an authoritative standard of reference, and prejudices the whole movement for registration in the eyes both of the profession and the public.

As regards the progress of registration in Column B, the report states that in January, 1905, the Council was invited to supply the Consultative Committee with full statistics of the progress of registration up to that date, together with any suggestions which the Council desired to make with regard to its future working. In the memorandum subsequently furnished to the Consultative Committee the Council took occasion to re-emphasise certain significant facts threatening the progress of registration.

The apprehensions of the Council centre round two considerations : first, that the number of men applicants who are producing evidence of having undergone any form of professional training previous to entering on secondary-school teaching is entirely disproportionate to the needs of the profession ; secondly, that returns received from secondary training colleges make it obvious that this disproportion threatens to continue. At the end of 1905 the Council have reason to consider that their anxiety is well founded. Of the 10,459 teachers now registered in Column B, 937 have obtained one of the teachers' certificates mentioned in the Order in Council, of whom only 93, *i.e.* less than 10 per cent., are men ; of the 937 teachers referred to, 409 have undergone a course of training at one of the institutions mentioned in the Order, of whom only 13, *i.e.* less than 3½ per cent., are men. Again, a repetition of the inquiry addressed last year to authorities of these institutions has elicited that in December, 1905, the number of male students in residence at one or other of fifteen of these institutions (from the one remaining no reply was received) reached the total of 123. The number is nearly double that of the corresponding one for 1904 ; but when it is noted that a single Roman Catholic institution accounts for as many as 53 of the students in question, the general outlook cannot be held to have materially improved.

The conclusion is further supported by the fact that the opportunities furnished by the Order of carrying on the training of secondary-school teachers outside of training institutions continue, in the case of men, to be entirely neglected.

The Council reaffirms its view that this continued neglect of training is due to inability to incur the expense of a training course rather than to failure to appreciate the value of professional preparation, and until the financial prospects of secondary-school teachers improve, this difficulty will remain to be reckoned with. Moreover, it is unlikely that local authorities will bring pressure to bear by recognising in a marked degree the work of a trained as compared with that of an untrained teacher until registration and the professional training attendant on it are upheld by legal sanction. It cannot in this connection be overlooked that the current "Regulations for Secondary Day-Schools" under the Board of Education do not contain any reference to the register ; yet it is highly questionable whether the movement towards registration will become general until the Board is prepared to state that no secondary school in which the headmaster and a fair proportion of the staff are not registered teachers will be eligible as a grant-earning institution. Other than a gradual enforcement of training is necessarily prohibited by the fact that the total number of trained teachers in the secondary branch of the profession is at present a comparatively negligible quantity. But should the application of the permanent requirements, under which no untrained teacher will be eligible for Column B, be allowed to pass without some announcement from the Board which will cause the profession to realise the necessity of registration, there is a risk that a general neglect of the register will ensue.

But though unable to regard the stability of registration as assured, the Council does not wish to suggest that its experimental stages are proving devoid of encouragement. That the training of women teachers has received considerable impetus cannot now be questioned, nor is it the case that the standard of academic attainment in the profession at large has remained unaffected. It is a fact not without significance that an appreciable number of teachers of some years' standing have improved their academic qualifications in order to gain admission to the register.

These points are among many which indicate that registration may yet become an important means of securing professional efficiency. Moreover, with regard to the in-

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fluence exerted by registration on its administrative side, the Council has every reason to think that the fact that the status of a school is improved when it receives "recognition for the purposes of registration" is a powerful incentive not only to the maintenance of satisfactory conditions in the schools which succeed in passing muster, but also to the raising of those which fall below the requisite standard. One of the most gratifying circumstances noted by the Council is that as many as thirty-three schools in England and Wales to which recognition was in the first instance refused have since taken steps which have enabled them to be accepted.

OXFORD LOCAL EXAMINATIONS. SET SUBJECTS FOR 1907.

Preliminary.

Religious Knowledge.—(*a*) I. Samuel (chap. i.–xviii.), (*b*) St. Matthew (chap. i.–xviii.), (*c*) Acts (chap. i.–xii.), (*d*) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or the Outlines from 1399–1603, or the Outlines from 1603 to 1714, or the Outlines from 1714–1815, or the Outlines from 1815–1871.

English Author.—Either (*a*) Scott's "The Talisman" or (*β*) Stevenson's "Treasure Island." Either (*α*) Kingsley's "Water Babies" or (*β*) "Select Poems from Tennyson" by George and Hadow (i.–xxi.) (Macmillan).

Geography.—(iii.) The geography of one of (*a*) England and Wales, or (*b*) Scotland and Ireland, or (*c*) India.

Elementary Latin.—"Tales of Early Rome" (sections i.–iv.), by J. B. Allen (Clarendon Press).

Elementary Greek.—Marchant's "Greek Reader," vol. i., pp. 1–25 (Clarendon Press).

Elementary French.—Either Pierrault's "Contes des Fées," edited by Berthon (Hachette), or Gozlan's "Le Châteaux de Vaux" (Clarendon Press).

Elementary German.—Buchheim's "Short German Plays," second series, pp. 1–42 (Clarendon Press).

Junior.

Religious Knowledge.—(*a*) I. Samuel, (*b*) St. Matthew, (*c*) Acts i.–xvi., (*d*) Prayer Book.

Ancient History.—Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—(*α*) Outlines of English History from 1066–1399, with special questions on the Reign of Edward III.; or (*β*) Outlines of English History from 1399–1603, with special questions on Foreign Affairs during the Reign of Queen Elizabeth; or (*γ*) the Outlines of English History from 1603–1714, with special questions on 1640–1658; or (*δ*) the Outlines of English History from 1714–1815, with special questions on the period 1784–1815; or (*ε*) Outlines of English History from 1815–1871, with special questions on the period from 1832–1859.

Early English History.—Outlines of English History from 55 B.C. to 1135 A.D.

Foreign History.—Outlines of General European History from 1598–1715.

English Literature.—Either (*α*) Stevenson's "Treasure Island" or (*β*) Shakespeare's "Twelfth Night." Either (*α*) Shakespeare's "Coriolanus" with North's translation of Plutarch's "Coriolanus" (Clarendon Press), or (*β*) Shakespeare's "As You Like It," or (*γ*) Scott's "Talisman." Either (*α*) Byron's "Childe Harold," Canto iii., or "Select Poems of Tennyson" by George and Hadow (Macmillan). Either (*α*) Matthew Arnold's "Merope" (with Whitelaw's translation of the Electra), edited by J. Churton Collins (Clarendon Press), or (*β*) Johnson's "Life of Milton" and "Vanity of Human Wishes."

Geography.—General: (i.) Geographical Principles, (ii.) British Isles, (iii.) *one* of (*a*) Mediterranean region, (*b*) Monsoon region of Asia, (*c*) Atlantic region of North America.

Latin.—Cæsar, De Bello Gallico V.; Virgil, Aeneid IX.

Greek.—Greek Reader, vol. i., Marchant (Clarendon Press); Scenes from Antigone (Clarendon Press).

French.—Either Chateaubriand's "Mémoires d'outre-tombe" (Clarendon Press) or "Histoire d'un Conscrit" by Erckmann-Chatrian.

German.—"Heute mir, morgen dir" (Clarendon Press).

Senior.

Religious Knowledge.—(*a*) I. Samuel, (*b*) St. Matthew, (*c*) St. Matthew in Greek, (*d*) Acts, (*e*) The Epistles to the Galatians and of St. James, (*f*) Perry's "History of the English Church," Second Period, pp. 1–401 (sixth edition, Murray).

Ancient History.—Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—(*a*) English History, (i.) 1066–1399, (ii.) 1399–1603, (iii.) 1603–1714, (iv.) 1714–1815, (v.) 1815–1871.

Early English History.—Outlines from 55 B.C. to 1135 A.D.

Foreign History.—Outlines of General European History from 1598–1715.

English Literature.—Either (*α*) Milton's "Samson Agonistes" and "Lycidas" or (*β*) Shakespeare's "Twelfth Night." Either (*α*) Shakespeare's "Coriolanus" with North's translation of Plutarch's "Coriolanus" (Clarendon Press), or (*β*) Burke's "Reflections on the French Revolution," pp. 1–107 of Payne's edition (Clarendon Press), or (*γ*) Spenser's "Faery Queene," Book II. Either (*α*) Byron's "Childe Harold," Cantos ii., iii., or (*β*) Tennyson's "The Lady of Shalott and other Poems" and "English Idylls and other Poems," or (*γ*) "Selections from Addison's Papers contributed to the *Spectator*" (edited by T. Arnold), sections 1, 2, 3, 7 (Clarendon Press). Either (*α*) Matthew Arnold's "Merope" (with Whitelaw's translation of the Electra), edited by J. Churton Collins (Clarendon Press), or (*β*) Johnson's "Life of Milton" and "Vanity of Human Wishes."

Geography.—(i.) Principles of Geography, (ii.) British Empire, (iii.) one of (*a*) Europe, (*b*) Asia, (*c*) North America (including West Indies).

Latin.—(*β*) Livy V., or (*γ*) Cæsar, De Bello Gallico, IV.–VI.; and also (*β*) Horace, Odes, Book IV., with Epistles, Book II., or (*γ*) Virgil, Aeneid IX.

Greek.—(*β*) Plutarch, Coriolanus, or (*γ*) Thucydides III., chap. i.–l.; and also (*β*) Sophocles, Antigone, or (*γ*) Euripides, Medea.

Horatius and other Stories. Adapted from Livy by G. M. Edwards. With notes and vocabulary. xv.+80 pp. (Pitt Press Series.) 1*s.* 6*d.*—We are glad to welcome another school-book by Mr. Edwards. His "Stories of the Kings of Rome" was an admirable beginners' book, and this is as good. We wish it all success. The only criticism we would offer is, that for boys in this stage all vowels long by nature should be marked in the text.

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HISTORY AND CURRENT EVENTS.

"The *rôle* of the city may yet be a great factor for peace in the world. . . . Here from Paris, the very Mecca of the gospel of the brotherhood of man, I would fain offer to all the other great cities and capitals of the Old World and the New a fraternal appeal, without reserve, indicating how much, in my humble opinion, depends on them and their co-operation," &c. So said the chairman of the London County Council in the beginning of February last. We may pass with a mere mention our wonder that Sir E. Cornwall should speak of Mecca rather than Jerusalem as the source of a gospel of brotherhood, because our thoughts are running to Hellas and the Hanseatic league. What has been the *rôle* of the city—the πόλις—in the past history of the world? Hellas knew no empire, and the Peloponnesian war was fought to destroy the hegemony of Athens, as the Persian wars had been fought earlier to avoid absorption in the dominions of the Great King. Hanseatic towns and cities knew an empire that was powerless for law and order—commonly called peace—and united to gain protection for commerce from the petty wars of their day. Which is Sir E. Cornwall's ideal?

Six petitions have been presented to the present House of Commons asking that elections may be set aside on the ground of bribery and corruption. We note, first, that they are *petitions*, not demands as of right. Theoretically, the House of Commons could legally refuse them without reason given. Secondly, they are presented to the House of Commons, not to the Chancery, from which the writs are issued, and to which they are returned. So, since the reign of James I., a court has no power to revise the returns to its own decrees, and the House then wrested from the king the power of revising returns. That surely is peculiar in jurisdiction. But, thirdly, the House does not now, as it did in the seventeenth and the first half of the eighteenth century, trust itself to decide these election petitions. It does not even, as in the later half of the eighteenth and beginning of the nineteenth century, entrust the inquiry to committees of its own body. It refers them to certain specially appointed judges, who report their opinion to the House. That opinion is now always adopted. "Write an essay on the legal aspects and respective advantages and disadvantages of these three methods."

Some are claiming for the Parliament elected this last January that it is, to a large extent, a Nonconformist body, and Liberationists are hoping for much alteration in the legal position of the Established Church. We leave the practical question to the politicians, and think of parliaments in our past history that may be called "nonconformist." We may not, of course, give that name to the Long Parliament of Charles I., for its members, though opposed to the ecclesiastical tendencies which were favoured at Court, were thoroughly convinced that they represented the opinions of the majority of the Established Church. Even when they abolished episcopacy and decreed that the Church of England should be changed "according to the Word of God and the example of the best reformed churches" they were not nonconformist, for they were the triumphant party. Even the "Little" parliament of 1653 and the two parliaments of Oliver Protector are disputable in this respect, for, though Oliver's power was but military, it was the sole power, ecclesiastical or civil, then extant. The only indisputably nonconformist Parliament in our history, therefore, is one which was merely contemplated, that, viz., which was to have met in 1688–9 under the auspices of James II.

It is proposed to alter the rules of procedure in the House of Commons. In the course of the preliminary conversation which preceded the appointment of a Select Committee for the purpose, Mr. Redmond "mentioned some practical changes which would, he thought, conduce greatly to the comfort and convenience of members, *especially those who were not well off* and who resided at a distance from Westminster." What are, and have been, the legal and actual requirements for qualification for membership of the House of Commons? In the Middle Ages, burgesses represented burgesses, citizens citizens, and knights of the shire, who must be "belted knights," represented the forty-shilling freeholders of the country. They were paid wages, but we do not suppose these wages covered all their expenses. When, in the fifteenth, and still more in the sixteenth, century, membership of the House became attractive for political or pecuniary reasons, men were willing to serve who could afford to do without wages. Then in the seventeenth and eighteenth centuries seats became valuable in the market, and no one could hope to enter the House who did not possess wealth or could not find a patron. So grew the tradition which is now, in days of Labour members, gradually passing away. What of the future?

ITEMS OF INTEREST.

GENERAL.

In a letter addressed to the Principal of King's College, London, the Board of Education reiterates its determination to lessen the number of candidates for a university degree. The reasons given are: (*a*) degree work does not fit a man for primary-school teaching; (*b*) a large number of candidates fail; (*c*) the public money is not intended to be used for this purpose. The Board goes on to suggest that universities may, if they please, modify their examinations. Now, if the Board knew the inner life of training colleges, it would be aware that degree work has been forced on the students by the insufficiency, the variability, and the valuelessness of the Board's own examinations. Some years ago the certificate was of value; but the manifold changes and the constant uncertainty have reduced the certificate to a shadow. Will it be believed by the outsider that now in March the training colleges do not know for certain whether the list this year will be printed in three divisions or in one, *i.e.* whether it will be an honour list or a qualifying pass list? There is no other examination in England which treats its candidates thus.

It is suggested by the Board that degree work prevents a man from doing other work, while the fact is that the degree work is extra work, the work which the Board requires from all being examined and reported on by the Board itself. It is suggested further that degree work involves a strain, while the fact is that the optional subjects allowed by the Board for its own examination cover the same ground as the degree work, and certainly do not fit a student for primary teaching either more or less than the university work. The statement that a large number of students fail is true—20 per cent. failing in day and 40 per cent. in residential colleges (we take the Board's figures)—but it is not stated that the percentage of failures is much less than that for the whole kingdom, which for the past three years ranges from 38 per cent. to 60 per cent., and is about 50 per cent. for Intermediate examinations (we take the University's figures). The fact that so many students do go in and fail at the University's examinations shows how lamentably inadequate are the provisions of the certifi-

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cate. A certificate examination worthy the name, with the results arranged in honour or distinction classes, and seriously tightened up, would be far more likely to accomplish the Board's purpose. Mutual misunderstanding among great educational agencies and an unwillingness to take full responsibility are mainly answerable for the present policy, the immediate result of which will probably be a further depletion of the ranks—already emptying—of the men teachers.

A largely attended conference, convened by the Association of Headmistresses, was held on February 24th to consider resolutions as to the education and training of girls who have been awarded scholarships tenable in secondary schools in preparation for teaching in elementary schools. Miss F. Gadesden, president of the association, welcomed the inspectors deputed to attend by the Board of Education, many members of the London County Council education department and inspectorate, the principals of training colleges for elementary teachers, the heads of many pupil-teacher centres, and the officials of various educational associations. The following resolutions with reference to girls preparing to be pupil-teachers—that is, girls up to sixteen years of age—were carried :—(1) That all pupils from elementary schools should, before entering a secondary school, (*a*) be interviewed by the head of the secondary school, who would judge of their general fitness, and, if she deemed it desirable, examine them by means of papers, and (*b*) be examined by the medical adviser of the secondary school, and refused if lacking in essentials; (2) that for the present it is in the best interest of elementary schools that the ranks of teachers in these schools should be largely recruited from pupils who have received all their education in secondary schools, and have gained probationer scholarships from those schools; (3) that girls preparing to be pupil-teachers should attend the secondary school for at least five years, from eleven to sixteen, or from twelve to seventeen, years of age.

The second subject discussed by the conference was the needs of actual pupil-teachers, girls from sixteen to eighteen years of age. It was resolved (1) that it would be to the best interests of the pupil-teachers that they should not form a separate class, but be in such a proportion to the ordinary scholars that the influence of the secondary school should predominate; (2) that their course in the secondary school should, so far as possible, be continuous from twelve to seventeen years of age, provision being, however, made for some practice in the elementary school at a sufficiently early age; and (3) that the various half-time systems fail to afford facilities for adequate time for the proper education of the pupil-teacher at a centre or higher school, and to secure sufficient opportunity for learning the art of teaching. The curriculum and examinations of girls preparing to be pupil-teachers and of actual pupil-teachers formed the basis of later discussion. The conference resolved (1) that it is advisable to divide scholars into three classes, and arrange their curriculum accordingly : (i.) those who will ultimately take a degree; (ii.) those who will take a matriculation examination or its equivalent; (iii.) those who will take the "preliminary examination for certificate" (*i.e.* the King's Scholarship examination); and (2) that a sound English education is of much greater importance than a knowledge of many subjects.

The report of the committee of the Cambridge University Day Training College for the year 1904–5 shows that in June, 1905, the college contained 54 students: 15 in the third year, 23 in the second, and 16 in the first. Of the present students, 13 hold scholarships awarded by the Toynbee Hall Pupil-Teachers' Scholarship Committee, and 21 hold scholarships, exhibitions, or sizarships at various colleges.

The Board of Education has just issued a list of twenty-five holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Six of the courses are in Germany, viz., Greifswald, Jena, Königsberg, Marburg, Neuwied, and Salzburg; four in Switzerland, viz., Geneva, Lausanne, Neuchâtel, and Zurich; one in Spain, viz., Santander; and the rest are in France, viz., Besançon, Tours, Honfleur, Paris, Grenoble, Nancy, St.-Servan-St.-Malo, Villerville-sur-Mer, Boulogne, Caen, Bayeux, Granville, Lisieux, and Dijon. The paper issued by the Board gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of local secretary, and other details of importance to intending students. Copies of the paper can be obtained free on application to the Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, London, S.W.

The success of the first International Congress on School Hygiene, held in Nuremberg in 1904, in bringing together workers of all countries and in giving an impetus to the study of this subject, was very great. One of the results of the Nuremberg congress was that teachers, medical men, architects, administrators, and others learnt how intimately their work and duties were correlated. One of the aims of the congress was to co-ordinate the efforts of these various workers and to aid each separate investigator to enjoy results and experiences collected from wide areas and great populations under the most diversified conditions. In order to prepare for the second International Congress on School Hygiene, which is to be held in London in August, 1907, the first step to be taken is the formation of a local committee for each town or district, which committee will approach the authorities of the Board of Education and the Treasury, the leaders of educational movements, the chairman of education committees, experienced teachers, and medical men who have experience in treating children. These local committees will be co-ordinated from London under national committees, which are to do all in their power to promote the success of the congress. They will endeavour to obtain the co-operation and support of Governments, education authorities, and committees of institutes and societies, and induce them to participate by delegating representatives to the congress or by sending representative exhibits to the School Hygiene Exhibition which is to be arranged. It is proposed that, besides sectional meetings and lectures, there shall be held at least three general discussions. The English committee invites suggestions as to the subjects under this heading. The first programme of the congress, with a list of the various national committees, the subjects of reference for general discussion, and details as to arrangements of the congress, will be issued shortly. The president of the London congress is Sir Lauder Brunton, and Dr. James Kerr and Mr. G. White Wallis are acting as honorary secretaries. All communications relating to the School Hygiene Exhibition should be directed to the Secretary of the Royal Sanitary Institute, Margaret Street, London, W.

Grants in aid of secondary schools in London amounting to £66,895—namely, £62,850 for maintenance and £4,045 for equipment—have been approved by the London County Council for the coming year. There are now fifty-two secondary schools which have come under the Council's

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system of inspection and control. At the meeting of the Council on March 6th, the Education Committee presented a report dealing with the provision of secondary school accommodation for the holders of the Council's scholarships. The report shows that the total number of secondary school places to be found in September, 1906, may be put, approximately, at 1,150 boys and 2,800 girls. The total number of the Council's scholars will increase, the report points out, from the present 2,015 boys and 3,686 girls, to about 3,705 boys and 7,338 girls in 1909–10, when it will have reached its normal figure. Adding to this an estimate of 1,500 (300 boys and 1,200 girls) for the pupil-teachers likely by then to be in secondary schools, there is a total of 12,543 places (4,005 boys and 8,538 girls) which the Council will require to have at its command by September, 1909. The lack of school places presses most hardly upon the poorest children, whose parents are unable to incur travelling expenses. The committee has obtained reports which indicate that there will be—taking London as a whole—enough places in September next for boys, though with practically no margin. The deficiency with regard to girls is more urgent and more serious. It amounts, in the aggregate, to about 1,200 places, and it exists in practically all parts of London except the City and Westminster.

To meet these needs, the committee urges that the existing London County Council secondary schools shall be enlarged, and that a new elementary school in Woolwich, not yet required for elementary education, shall be utilised as a secondary school for girls; and in the south-western district it is proposed to erect suitable iron buildings for the temporary accommodation of two new secondary schools for girls, pending the erection of permanent buildings. As to the future supply of boys' schools, the report states that with the increasing usefulness of the former Grocers' School under the Council's administration, the building of the enlarged University College school at Hampstead, and the enlargement of some other schools, the Council may confine its own immediate action within a narrow compass. Of the 2,000 additional school places for boys which must be provided by 1910, the majority will probably be provided, with some aid from the Council, in the enlargement of existing schools. It is not, however, possible for the Council in all cases to effect its object by the offer of assistance to governors of existing schools who are prepared to co-operate by expenditure from their own funds. The committee further states that it has considered the question of the possibility of obtaining additional accommodation by means of comparatively small grants to the existing secondary schools. In some of the proposals for extensions where schools are already overcrowded, the result may probably not appreciably increase the present accommodation, but it will materially increase the efficiency of the teaching. In the majority of instances, however, in which extensions are proposed, the result will be a considerable increase in accommodation, and it will be possible to allot to the Council's scholars a larger number of places at a cost altogether out of proportion to the cost of pursuing the alternative policy of erecting new schools for the purpose.

The Education Committee of the London County Council has issued another report, and this one deals with the question of apprenticeship. The old-fashioned plan with its scheme of premiums has almost died out, and the report says that an effective scheme of scholarships is the only satisfactory substitute. The plan suggested by the committee may be summarised thus: The intelligent boy leaving the elementary school will have offered to him a choice of two courses of instruction, both of which will assure him an all-round training in a skilled trade. The first, or "part-time" system, provides that he shall spend a portion of the week in the workshops and the remainder in the day technical school; the second makes use of evening classes. In certain cases, scholarships carrying free tuition and a maintenance grant will be awarded to the day students to compensate for the small earnings received during the years of training. Scholarships of smaller value will be allowed to selected evening students in order to encourage regularity of attendance. Any efforts intended to complete the training given in our schools, by scholarships or by parents' fees, are to be welcomed, and in the former case, indeed, are necessary if the nation is to reap any real advantage from its expenditure on school scholarships.

A London Inter-collegiate Scholarships Board was constituted in 1904 with the approval of the governing bodies of University College, King's College, and the East London College, for the purpose of holding a combined annual examination for entrance scholarships tenable at these colleges. One examination was held last year; the next will take place in May. No candidate will be admitted to the examination who has not passed the London Matriculation examination, or an equivalent. Application should be made to the Secretary of the Board, University College, London, for forms of entry, which must be returned not later than May 1st next.

The annual general meeting of members of University College, London, was held on February 21st. Lord Reay occupied the chair. In moving the adoption of the annual report, Lord Reay referred particularly to the benefaction of Mr. E. G. Bawden, whose gift of £16,000 had completed the fund of £200,000 required for incorporation; also to the acquisition of the library of the late Mr. F. D. Mocatta, transferred to the college by his executors and the Jewish Historical Society. He directed attention to the list of benefactions, including those of the Fishmongers' and Drapers' Companies, and to the improved financial position of the college on account of the permanent increase in the Parliamentary grant. He went on to say that this was the last annual general meeting under the old order. The object of the incorporation, under which the college will to a certain extent lose its independence, is to secure the good of university education in London as a whole. All are convinced that unless and until the University of London obtains direct control of all the chief centres of university education in London, the task committed to it of organising and directing university education in London cannot be completed. It is, therefore, with the greatest satisfaction that he has heard that the authorities of King's College are proposing to follow the example of incorporation set by University College.

A circular issued in France by M. B. Martin has reference to the supervision of classes during intervals between lessons. Some time ago an accident took place, as the result of direct disobedience, at a provincial school. The parent of the injured child, who caused the accident, sued the teacher in charge and obtained damages under the Civil Code. The professors at one of the *lycées* lately sent a petition to the minister asking for dispensation from the duty of supervision. In reply, M. Martin says that the regulations are framed with a view of preventing the interruption of other classes at work and such recreation as might be termed horseplay. The main point, however, seems still unsolved—whether a master should be financially liable for an

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accident to a pupil. It would appear, however, that there are other reasons for the opposition of the professors. Some of them consider it undignified to undertake the work of a *répétiteur*. Others are aghast at the difficulty of recognising the cause of mischief in a throng of two hundred boys. And others, again, consider that the circular undermines their moral authority, for, if a disturbance occur and a professor intervene, he may become the butt of his pupils in case of failure to quell it. M. Martin's comparison of the supervision in a playground with the conduct of excursions and school journeys is, they all declare, unsound. On a school journey the pupils are those of the professor's own class; they listen attentively to the observations which he has to make on minerals, plants, and flowers, and never think of indulgence in surreptitious amusements.

In October last the town council of Nice arranged that every new entrant at the town schools should be supplied with a note-book of hygiene. In it there are entered personal details of the owners and a *curriculum sanitatis*, with a brief *résumé* of the principal rules of health. An abbreviated duplicate is kept for reference by the medical inspector of the school. The latter contains, under certain headings, more information than is divulged to the parent, so that the latter need not take alarm unnecessarily. This proceeding is in some way the counterpart of Dr. Kerr's efforts in the treatment of measles in those schools of the Woolwich district which are under the London County Council.

The Teachers' Guild has issued a preliminary notice of its Modern Languages Holiday Courses for 1906. Courses are to be held at Tours, Honfleur, Neuwied, and Santander. At Tours, an elementary course will be provided under the direction of M. Marjault, and the subject chosen is "Explications de locutions proverbiales et phrases toutes faites pour aider à l'intelligence des textes et de la conversation." An advanced course at Tours is being arranged. Elementary and advanced courses will be held at Honfleur; the former will be superintended by M. A. Blossier and the latter by M. A. Leconte. The subject chosen is "La Littérature Française de 1550 à 1900, avec l'étude spéciale des auteurs prescrits par les programmes de l'Université de Londres pour les différents examens." At Neuwied, Prof. A. Biese will conduct elementary and advanced courses. The elementary lessons will consist of phonetics, pronunciation, and conversation. The subject in the advanced course will be "Goethe's Lyrik und die Nachgoethische Lyrik." At Santander, an elementary course will be conducted by Señor Don Ramón Noval y Cagigal. Fuller information may be obtained from the Secretary of the Guild, 74, Gower Street, W.C.

Holiday courses in French for the benefit of foreign students will be held again this year at the University of Grenoble. The courses will extend over four months, from July 1st to October 31st. The directors of studies during July will be MM. Morillot and Besson; in August, M. de Crozals; in September, M. Rosset; and in October, MM. Rosset and de Crozals. Full particulars as to these courses of study may be obtained from M. Marcel Reymond at the University.

The University of Dijon offers again this year summer courses for foreign students. A full programme and favourable terms have been arranged. The courses will extend from July 1 to September 30; and full particulars may be obtained from the Secretary, M. Ch. Lambert, 10, rue Berbisey, Dijon.

The Goldsmiths' Company has made a grant of £1,000 to the building and endowment scheme for Bedford College, London. The Grocers' Company has granted £25 for the same purpose. Three more donations towards the Queen's special list of £100 contributions have been received since the last announcement—from the Duchess of Marlborough, Mr. and Mrs. Henry Yates Thompson, and Mr. and Mrs. James Bryce.

The Council of the London Chamber of Commerce, on the recommendation of its Commercial Education Committee, has decided to hold an examination in Esperanto. The syllabus will be the same as that for modern foreign languages.

In order to improve the handwriting given in all grades of schools, and to meet commercial requirements so far as this neglected subject is concerned, the Commercial Education Committee of the London Chamber of Commerce has resolved that a separate examination in handwriting shall be added to the present syllabus for Junior candidates, and that the first examination in this subject shall be held on May 30th, 1906. The examination will be similar to that held for boy clerkships in the Civil Service, and will consist of tests in rapid legible writing. Separate certificates will be granted for success in this subject.

In the new House of Commons there are 113 members who graduated at Oxford, and ninety-one who took degrees at Cambridge. Seventeen are graduates of London, and one of the Victoria University. There are twenty who studied at Edinburgh, eleven at Glasgow, two at St. Andrews, and one at Aberdeen. Dublin University has thirteen graduates in the House, the Royal University three, and the old Queen's University three. Cardiff University College sends one member to Parliament. Colonial universities are represented as follows:—Toronto two, Ontario, Montreal, and Melbourne one each. Two members studied at Harvard; and the following foreign universities are also represented:—Zurich, Bonn, Göttingen (two each), Leipzig, Heidelberg, Laval, Brussels, Berlin, and Baden (one each).

The next summer meeting for university extension students and others will be held at Cambridge in August. The arrangements for the scholarships and other privileges form to a large extent a new feature of the programme. The meeting will be divided into two parts. Part I. will extend from August 2nd to August 15th inclusive, Part II. from August 15th to August 28th inclusive. The preliminary announcements show that the principal subject of study will be the eighteenth century, especially the period 1714–1789. The lectures will group themselves under history, English literature, art, France, probably with many of the lectures given in French by French scholars. Opportunities of study will also be offered in science, education, social reform, and theology, and there will be special classes for foreign students. Inquiries for further information should be addressed, endorsed "Summer Meeting," to the Rev. D. H. S. Cranage, Syndicate Buildings, Cambridge.

A course of lectures and practical work in geography will be held in Oxford between August 7th and 25th, provided a sufficient number of names is sent in by June 1st. The course is primarily intended for teachers. Lectures and map demonstrations will be given in the School of Geography for three or four hours each morning; several afternoons will be occupied by demonstrations of methods of surveying and map-drawing in the field, and by ex-

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cursions to places of special geographical interest—one of these excursions will be to a more distant district, and take up a whole day. A few evening meetings will be arranged for the discussions, especially on the teaching of geography. The course will deal with local geography, world geography, and selected aspects of historical and economic geography. Names of intending students, with a note of aspects of geography in which they are most interested, should be sent *as soon as possible* to the Reader in Geography, Old Ashmolean Building, Oxford, as the number of those who can take part in the practical demonstrations in the laboratory and field is limited.

IN November, 1904, Mr. C. H. Firth, Regius Professor of Modern History at Oxford, took the occasion of his inaugural lecture as an opportunity to deliver a very serious and damaging attack upon the existing Modern History School of the University. He pointed out various minor defects, such as its neglect of literature, of economic history, and of the history of the development of the British Empire; but his gravest accusation was that it does little to train historians, that it does not accustom its members to the use of original authorities, does not require a knowledge of modern languages, does not inculcate the mental habits of the scholar. Now comes Prof. Oman, fresh from twenty years of tutorial work, with a vigorous defence of the Modern History School and a powerful apology for the old order. His lecture has been published by the Clarendon Press. He holds that Oxford "is a place of education as well as a place of research," and contends that "the School is discharging a more generally useful function as it stands at present, than it would if it were equipped with a severely specialist curriculum, intended only for those who were destined for the career of researchers in or teachers of history."

PROF. OMAN'S main proposition is contained in the sentence: "It seems to me that we must frankly recognise that the Modern History curriculum must be drawn up rather with an eye to the vast majority of men who seek in it a liberal education, than to the small minority to whom a technical training in historiography might conceivably be more profitable." Incidentally, the lecture contains some delightful reminiscences of Stubbs, Freeman, Froude, York-Powell, and Lord Acton; but these are evidently introduced as "cover" to enable the lecturer to approach along the pathway of time cautiously and imperceptibly to within striking distance of his "good friend," Prof. Firth. He delivers his blow, not without some effect. But he certainly over-reaches himself when he jeers at all training in research, even for would-be specialists, and says that "the true historian is born and not made." This is no more the case with the historian than it is with the doctor or the lawyer. Prof. Firth is likely to recover from this assault.

THE eighth annual report, that for 1905, of the committee of the Moral Instruction League has been received. The object of the league is to introduce systematic non-theological moral instruction into all schools, and to make the formation of character the chief aim of school-life. The report shows that twenty-five education authorities, as compared with eleven last year, had at the close of 1905 decided to make provision for systematic moral instruction in their schools. They are the following:—Birmingham, Leicester, Bradford, Monmouthshire, Durham County, Burton-on-Trent, Colne, Bexhill-on-Sea, Shipley, Barry, Cheshire, Derbyshire, the West Riding of Yorkshire, Mansfield, Gloucester, Margate, Ebbw Vale, Sheffield, Huddersfield, Brighouse, Hanley, West Suffolk, Surrey, Cheltenham, and West Hartlepool. These authorities control more than 3,000 schools, containing about one million children. Accompanying the report is a copy of a graduated syllabus of moral instruction, including training in citizenship for elementary schools, which is evidently the result of careful thought on the part of experienced teachers. Copies of this syllabus may be obtained from the Secretary of the League, Mr. Harrold Johnson, 19, Buckingham Street, Strand, W.C.

THE Incorporated Associations of Headmistresses and Assistant-mistresses have considered the question of the manner of appointing assistant-mistresses to posts in secondary schools, and have brought before the governing bodies of such schools the great importance of granting to the headmistress freedom to select the members of her staff, and to recommend them for final appointment by the governors or education authorities. They consider it of importance, also, that an assistant-mistress should be dismissed only by the governing body at the request of the headmistress, due opportunity being given to the assistant-mistress to state her case; but that during a probationary period to be fixed by the governing body—in no case to exceed three terms—it should be possible to terminate the appointment by one month's notice on either side without reference to the governing body.

THE Rev. Dr. Gow, headmaster of Westminster, has been elected chairman of the committee of the Headmasters' Conference. The committee consists of the headmasters of Bedford, Birmingham, Christ's Hospital, Eton, Marlborough, Malvern, and Rugby.

THE Rev. Frank Stephenson, assistant master of Cheltenham College, has been appointed headmaster of Felsted School.

THE Rev. W. R. Dawson, headmaster of the King's School, Grantham, has been appointed headmaster of Brighton College.

MR. F. A. HILLIARD, headmaster of the Royal Grammar School, Worcester, has been appointed to succeed Mr. R. L. Leighton as headmaster of Bristol Grammar School.

THE Rev. W. T. Keeling, headmaster of Warwick School, has been appointed headmaster of Grantham School.

MR. JOHN A. GREEN, professor of education at the University College of North Wales, Bangor, has been appointed first professor of education at Sheffield University.

THE next open competitive examination for appointments as apprentices to the various trades in His Majesty's dockyards will be held in May. Candidates, who must be between fourteen and sixteen years of age on May 1st, should send their applications to the Civil Service Commission before April 17th. The subjects of examination are arithmetic, English (including handwriting, spelling, and composition), geography, geometry and algebra, elementary science, and drawing. Successful candidates are allowed a choice of trades according to their positions on the list; they are bound by indentures to serve for six years, during which they receive 4s. a week, increasing to 14s., and instruction at the dockyard school.

CANDIDATES who wish to sit for the next examination in August for the Indian Civil Service, Class I., clerkships in the Home Civil Service, and Eastern Cadetships, must

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send their applications to the Secretary of the Civil Service Commission before July 1st. The limits of age are twenty-two to twenty-four on August 1st. Of the sixty-four successful competitors last August, all but one had had the benefit of a public school and university education. The choice of subjects for these examinations is extensive. The salaries are good; for instance, in the Straits Settlements, thirty-seven posts carry salaries of from £420 to £1,000 a year, three of £1,200, one of £1,500, and one of £1,700.

The next examination for junior clerkships in the Ecclesiastical Commission will commence on May 8th. Candidates must be between eighteen and twenty-two years of age, and must send in their application forms not later than April 20th. The subjects are arithmetic, algebra, précis, English composition, English history, geography, Latin, and either French or German. The salary of a junior clerk is from £70 to £350 a year; there is a possibility of promotion, on the ground of merit, to the upper class of the establishment after eight years' service. In the establishment there are about thirty junior clerks, fifteen officers with salaries of £350 to £600, and ten officers with salaries above £700 a year.

SCOTTISH.

The Draft Minute on the training of teachers continues to occupy public attention. The Press generally has received it with the greatest favour, though many consider it is too big a scheme to carry through by means of a minute. School boards, with the notable exception of Glasgow and Govan, have declared as emphatically against it. As their objections are founded mainly on financial grounds, their opposition should be to a large extent discounted. No public body has, so far, had the courage to attack the new minute on educational grounds. The pupil-teacher system—among many merits—had several patent disadvantages which were becoming accentuated every year. Under it the intellectual life of the individual did not get a proper chance of healthy development, and it was apt to send him forth to his life-work with narrowed interests and case-hardened mind.

The teaching profession have heartily welcomed the two main principles of the minute:—(i.) that *all* teachers must attain a satisfactory standard of general education; (ii.) that *all* teachers must undergo a carefully supervised course of professional training. The feature in the minute to which most objection is taken is the probation stage, from twelve to fifteen years of age. It is rightly held that it is absurd to label children at this early age as future teachers. Neither parents nor teachers can have any reasoned opinion on the employment for which children of this age are fitted, nor can pupils themselves have anything but the most fanciful conception of the work they would like or are capable of. The London Education Committee was recently faced by the same problem. Its sub-committee recommended a bursary scheme for the catching of young teachers at eleven or twelve years of age, but the common sense of the general body emphatically declared for a liberal bursary scheme which would attract the best pupils to higher education, no matter what profession or employment they had ultimately in view. The Scotch Education Department would do well to pay heed to this experience, strengthened as it is by the strong attitude taken up by Prof. Sadler against premature selection of pupils for particular employments. What is required is an educational highway to secondary education for all able and willing to go thereon. From this supply, teaching, like other occupations, will get a sufficiency of candidates if it offers the right attractions.

The fifth annual report of the Carnegie Trust for the Universities of Scotland has just been issued, and contains interesting information regarding the work of the Trust in the endowment of post-graduate research and the allocation of grants to the universities. The total expenditure for the year under the former head was £4,526, and the estimated grant for the current year is £6,776. There can be no doubt that this is one of the most important and valuable departments of the Trust's operations, and it is satisfactory to find that the sum allotted to this work is steadily increasing. Grants amounting to £38,861 have been claimed and handed over during the year 1905 to the four universities, making a total grant of £97,241 to these bodies since the creation of the Trust three years ago. In addition, grants amounting to £5,224 have been paid over to extra-mural schools and technical colleges. It is to be hoped the needs of these bodies will be kept increasingly in view, as they are doing notable work in the cause of education. The West of Scotland Technical College alone has more than 5,000 students, most of them engaged in industrial occupations during the day, and qualifying themselves to be captains and foremen of industry by evening study.

In regard to the second part of the Trust's operations—the payment of class-fees—the report is by no means satisfactory. The total expended during the year on this head amounts to £47,853, as against £45,903 last year. Since 1902 there has been a constant increase every year, due partly to the increase in the number of beneficiaries and partly to the greater average number of classes attended by each of them. A further reason, however, for this increase emerges this year for the first time, viz., the raising of the class-fees in three of the universities. Beneficiaries and universities between them seem determined to kill the goose that lays the golden eggs. The net income available for this particular branch is £49,836. If the fourth university—as it is almost certain to do—follows the lead of its compeers, the committee will find themselves in the position of not being able to meet their liabilities under this head. The committee therefore feel that they cannot continue paying fees under the existing conditions, and intimate that, in conjunction with the universities, they are seeking a readjustment of the regulations under which this portion of the Trust funds is distributed. It is satisfactory to find that six beneficiaries have refunded class-fees paid for them in former years by the Trust.

In consequence of the increased grants to England of close on half a million sterling for education, a sum of £160,000 annually will come to Scotland. This, together with the unappropriated balance of the surplus grants, leaves a sum of well over a quarter of a million to be allocated for educational purposes in Scotland. It is surely not too much to hope, in view of the statements of leading members of the Government on the inadequacy of the present Superannuation Act, that some part of this amount will be set apart for the purpose of supplementing pensions. Sir Henry Craik has already declared for this policy, and the increased grants just announced should greatly strengthen his position. Failing some improvement in this direction, it is not too much to affirm that the new regulations for the training of teachers will fail to attract a sufficient number of male candidates—and, let it be added, will deservedly fail.

An extraordinary case of arbitrary dismissal has just occurred in Gartmore, Stirlingshire. The teacher, Mr. Menzies, ventured in the interests of the school to give an

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opinion to certain members of the Board on the qualifications of an applicant for a vacancy in his school. The Board resented his action, and threatened to dismiss him unless they received an apology from the teacher for his interference. A full and ample apology was sent, but the Board dismissed him because the apology was sent to the members as a Board and not to each individual. Needless to say, this is not accepted as the real reason. The teacher appears to have incurred the resentment of certain individuals by his strong advocacy of the use of unfermented wine in the Sacrament, and of certain others by allowing his daughter to play the organ in the parish church while himself an elder in the U.F. Church. *Hinc illae lachrymae.* The case has roused very great indignation over almost the whole country. One of the most satisfactory features in it is the strong support given to the teacher by the newspapers of the country. The cry for the abolition of the small school board has gone up to Heaven with increased bitterness, and even the most lukewarm supporters of extended areas have been stirred up to see the necessity for them.

THE lady graduates of the Scottish universities are taking legal action to vindicate their right to vote in parliamentary elections. They contend that they are on the university registers on precisely the same footing as men, and that nothing in the constitution of the universities entails on them any disabilities on account of their sex. A committee has been formed to raise an action in the Court of Session, and an appeal is being made for funds. The decision in the case will be awaited with great interest, though it is difficult to see how, unless the part be greater than the whole, women can vote in a university parliamentary election and not in any other.

IRISH.

THE Intermediate Programme for 1907 was shown to the Consultative Committee of Heads of Schools by the Assistant Commissioners in February. This is, of course, a guarantee that glaring anomalies in, and serious objections to, any set book or course can be pointed out before publication; and as long as the present cramping system continues, by which every school taking a certain subject must read the particular book or course prescribed and no other, it is, to a certain extent, satisfactory. But the chief criticism of the present system is aimed, not at the programme, but at the rules, and on these the committee are not consulted, and if they offer any suggestions they are met with a rebuff, of which the following is an instance.

THE committee represents both Protestant and Roman Catholic schools for boys and for girls. When it is unanimous, it has behind it the whole body of expert scholastic opinion in Ireland. It should carry great force. With the Intermediate Commissioners this seems to count for nothing. The committee took advantage of its meeting in Dublin to draw up two memorials. The first dealt with "the very grave situation created by the serious reduction of the scale on which school grants were calculated in 1905." We take some excerpts from it. "It would seem to be the obvious duty of the Government to make such financial provision for Intermediate education as would render the natural growth and improvement of the system possible, whereas the experience of 1905 will compel the schools to reduce expenditure once more, thus sacrificing to a considerable extent this efficiency. We venture to suggest that it would be extremely desirable that the Board should very strongly urge this view on the Government, and secure that, from some source, such additional funds should be provided as would get rid of the anomaly of penalising the schools in proportion to the growth of secondary education in this country." "Pending the solution of the whole question of the financial position of the Board . . . we beg most earnestly to ask the Board to supplement the diminished grants paid last December, so that the liabilities actually incurred in anticipation of the usual school grant may be met. This, we venture to suggest, could be done out of the reserves of accumulated income, which, we understand, amount to more than £100,000." The Board's reply to this is, "that in view of the possibility of a diminution in their income for the present year, even greater than that which occurred in 1905, the commissioners have decided not to encroach upon their reserve fund for the purpose of increasing the amount of the school grant for 1905." Two pertinent questions may be asked: Have the commissioners represented the gravity of the case to the Government? Will they in 1906, as in 1905, give away £5,000 of their income, which should go in school grants, as advances to managers or as bonuses to choirs and orchestras?

THE other memorial dealt with some of the rules, especially Rule 43, which "will operate with hardship and injustice in a very large number of cases." For instance, a student entering for the classical course will only be allowed to take the extra papers in classics, and not, say, in French, being thereby debarred from competing for the French medal or a French composition prize. "Had Rule 43 been in operation in 1905, no fewer than 52 boys who won special distinctions, viz., 13 medals, 30 composition prizes, and 9 special prizes, would have been prevented from competing for them." The memorial asked the Board to allow "a student to take the extra honour paper in any subject, such extra honour paper to count for medal, composition prize, or special prize only." This has been met by the Board with a direct negative.

THE number of students who have given notice of their intention to present themselves at the Intermediate examinations in the present year is the largest on record, viz.:—boys, 8,283; girls, 3,384; total, 11,667. This is an increase on last year of 1,379, being 840 boys and 539 girls. Last year showed an increase of 1,122 over 1904. However generally satisfactory these figures appear, they cannot but be viewed with mixed feelings by teachers, who see their successful efforts to improve education rewarded by diminished incomes.

IN these circumstances, it behoves Intermediate teachers to urge upon the Government to introduce a reformed system on the lines of the Dale-Stephens report, and with expanding grants. It is an open secret that reforms are contemplated, and there is an excellent opportunity for creating a genuine teaching profession. One of the signs of the times is the promised inquiry into the working of the department of which Sir Horace Plunket remains for the present vice-president. The secondary education grants administered by it should be transferred to the proper secondary educational authority.

THE Association of Women Graduates is approaching the authorities of the Royal University with a view to secure the representation of women on the Senate and Convocation. It is also collecting information on the question of insurance and the rates offered to teachers by different insurance companies. Its literary and debating society has had papers on "An Ideal Scheme of Irish Education," by Miss Maud Joynt, and on "The Celtic Element in English Literature," by Miss Hayden.

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WELSH.

The question of fees in the intermediate schools is attracting attention in Carnarvonshire. The Staff Committee sent in a report to the County Education Committee adhering to the present fees paid in the Bangor County School for Girls. Some critics maintain that a fee of £8 or £9 a year for secondary education places a secondary school beyond the reach of poor children, "for whom the schools are mainly intended." Surely the right way of putting the matter is to say that secondary schools are intended for those children who have the exceptional ability to profit by such education, whether their parents are well off or poor. It is perhaps old-fashioned to say that those parents who can afford should pay, and those who cannot should be helped. One thing is clear, that a secondary education worthy of the name cannot be given for less than £10 to £15 per pupil annually. If the school-fees are £4 or £5 a year, the balance has to be met somehow. There is the same problem in the university colleges of Wales. The education of each student costs probably from £25 to £30 per student; the fees are £10 a year. Good education cannot be cheap. The question is: Who is to pay for it? Those who benefit from it, or the local ratepayers, or the Treasury?

Merionethshire, in this matter, has taken its courage into its hands, and applied to the Local Government Board, under the Education Act of 1902, for consent to the raising of an amount which would be produced by a rate exceeding 2d. in the pound for the purpose of supplying or aiding the supply of education other than elementary, and of promoting the general co-ordination of all forms of education within the county. It was stated that there are seven secondary schools in the county and five school districts, and six of the schools were established under the Welsh intermediate education scheme. The gross revenue is £2,267; and, after deductions for examinations and inspections, £1,900 is divisible among the schools. These funds are inadequate, and the halfpenny rate had been supplemented by increased rate-aid under the Technical Instruction Act, which increased from a farthing in the pound in 1894 to 2d. in 1904–5. The result of the inquiry will be interesting, for what Merionethshire does, other counties will have to consider also.

Lord Stanley of Alderley has been speaking on a similar topic in Anglesey. He pointed out that probably the voluntary schools of the county would now come to be transferred to the public authority. The authority had required certain repairs to be carried out before they would take over such voluntary schools, and the managers had failed to raise the necessary funds. If, then, these schools became part of the public provision of schools, it would be "very unreasonable and inconvenient" if the county should fail at its own expense to carry out the repairs which they had demanded as absolutely necessary when the cost would have fallen on private managers. There would be financial burdens in putting schools in repair. And more—they would have to secure *the best type of teacher.*

With regard to Anglesey, some remarks of Prof. J. Morris Jones deserve a note. In moving a resolution that in the opinion of the committee a larger share of the cost of elementary education should come out of the Imperial Exchequer, he said that it must be admitted that the staffing of Anglesey schools was very unsatisfactory. For the whole of the country, certificated teachers formed 46·5 per cent. of the teaching staffs, while in Anglesey they were only 30·9 per cent. Teachers who were not certificated were not properly qualified, and Wales did not stand well in this respect.

Opinion seems to be consolidating in favour of a National Council of Education for Wales. Mr. Lloyd-George made an eloquent and impressive appeal at Cardiff in favour of calling a conference on the subject, and especially asking for that frame of mind in which, by judicious compromise, unanimity may be shown. He showed that he was in earnest by agreeing that Conservative candidates at the last election should be invited as well as Liberal M.P.'s. It was agreed by the conveners, the Lord Mayor of Cardiff and Mr. Lloyd-George, that the Bishops should be also invited. Miss E. P. Hughes has strongly urged that women should have their representatives. But neither Mr. Lloyd-George nor the Lord Mayor mentioned the summoning to the conference of any teachers. There is apparently serious danger that a National Educational Council will be recommended without providing for the presence on it of experienced educationists.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

The Teaching of Modern Languages. By Cloudesley Brereton. 111 pp. (Blackie.) 1*s.*—We can recommend this booklet as a concise statement of the manifold problems presented to the teacher of modern languages. Mr. Brereton is a moderate reformer; his experience is large and varied, and his remarks are worthy of careful consideration.

Graduated French Unseens. By Victor Oger. Parts I. to IV. 64 pp. each. (Arnold.) 8*d.* each.—These extracts have been skilfully selected from a large number of authors; they are interesting, and fortunately not too short. Sometimes a footnote would have been welcome, to the average teacher quite as much as to the pupil. It is a pity that the proof was not read with more care; in the first twenty pages of Part I. we meet with *pyasans, occidentent* (for *acci . . .*), *étes, ou* (for *où*), *ou* (for *on*), *deça* for *deçà*, *subitment*, as well as errors of punctuation.

L'Anniversaire de Blanche. By Clémence Saunois. viii.+72 pp. (Blackie.) 1*s.*—A series of pretty scenes of child-life, justly commended by Mr. Petilleau in his preface. The illustrations, by Mr. R. Hope, are very good. An appendix on the conjugation of the verb is added, and a vocabulary, which is not quite complete. The printing is clear and careful; the only mistake we have found is *revoirs* on p. 50.

Grimm, Die zwei Brüder. Edited by A. R. Hope Moncrieff. 40 pp. (Blackie.) 6*d.*—This fairy-tale, now edited, we believe, for the first time, is suitable for pupils in the second year of instruction. The text is very carefully printed, and the notes are good.

Zschokke, Der zerbrochene Krug. Edited by W. O. Brigstocke. 36 pp. (Blackie.) 6*d.*—Zschokke's charming idyll in explanation of a picture is well suited for cursory reading in or out of class. The present edition is convenient and neat. Mr. Brigstocke's notes are good. The only slips we have noticed are *Heine* for *Heyne* on p. 32, l. 3, and *streiteten* for *stritten* on p. 36, l. 23.

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Classics.

Arnold's Latin Texts. General editor, A. Evan Bernays. 8*d.* each. *Vergil: Select Eclogues.* Edited by J. C. Stobart. 64 pp. *Selections from the Georgics.* Same Editor. 64 pp. *Cicero: Pro Archia.* Edited by Margaret Brock. 64 pp. *Caesar in Britain.* Edited by J. F. Dobson. 64 pp.—The editor of this series appears to halt between two opinions, or perhaps many. He feels the general reaction against notes—so there are no notes. But there is a vocabulary, which, like notes, is a useful tool badly misused in school-books. Then again, there are long introductions, not only upon general questions touching the author, but on the particular book or selection which follows. The *Georgic* selections contain, besides Vergil's life (a short paragraph), an account of Hesiod and of Vergil's debt to Hesiod, a criticism of his "literary epithets," historical references explained, and actually two pages on the hexameter! There are eight pages of small print to introduce twenty pages of text and thirty-two pages of vocabulary. Similarly with the *Eclogues*, to which are added also four pages of notes on the plants and flowers mentioned. Most of this is the same substance as the discarded notes, only less easy to find. *Caesar in Britain* is more reasonable; but *Cicero pro Archia* deals with aliens at Rome, the Italian franchise, and three pages on the career of Archias—too learned, and most of it unnecessary. Further, each text has chapter or section headings giving a summary of the matter—a thing which the pupil should make for himself; it is part of the training. In the *Cicero*, the chief clauses are distinguished by a thicker type. Again, the texts are not complete. Another sign of confusion is the marking of long vowels. "Vowels long by nature are so marked, except where long by position," says one book. What is a vowel "long by position"? The vowel may be "in position," and the syllable may be long by the fact of the consonants "making position," but the quantity of the vowel is not changed: if it is naturally long it remains long; if short, it remains short. The statement made in the Vergil books, that "all vowels naturally long are marked" in the vocabulary and the first portion of the books, is inaccurate. Thus, in *Georgics* I. 34 we find *ardens*, which should be *ārdēns*, both vowels being naturally long as well as in position; and similarly all "concealed quantities" are unmarked in the series. This may have been done for some reason, but there is nothing to show that the editors know that there are such things as vowels long by nature and also in position. And why is the marking only used for a small part of some of the books? Is it to be inferred that the pupils are to learn how to read Latin correctly in one-third of a term? If so, why is the marking carried through in the *Cicero*? Is the *Cicero* the first term's work, and the time necessary for learning to read Latin correctly exactly one term and one-third? We are informed that the series is meant for "lower forms," and that each book is to provide one term's work. At what stage in the learning of Latin is this to be one term's work? Has the editor formed any clear conception of the help which should be given at the various stages of the study? when vocabularies can be used with benefit, or when the dictionary should be introduced? or how many stages there should be in learning Latin? The series is undoubtedly well meant, but it is amateurish; and, if we do not take care, as much harm may be done by crude and undigested attempts at reform, as by the system which is beginning to pass away.

Stories from Greek History. Re-told from Herodotus by H. L. Havell. xviii.+238 pp. (Harrap.) 1*s.* 6*d.*—The charm of the old Greek stories never palls, and Herodotus is an inimitable storyteller. Mr. Havell's book is therefore welcome in its attempt to re-tell a few of Herodotus's historical tales. Some of them are familiar to most children who read, but this book has the advantage of increasing the number of those available for English children. It contains the stories of Crœsus, of Cyrus, and of Rhampsinitus, with Cambyses and Polycrates, several anecdotes of Darius, Cypselus, and Periander, and a selection of stories on the history of Sparta and of Athens, including the Persian invasion. The book will be a good companion to the drier history-books, or an introduction to history for beginners. The style is simple and unpretending. There are sixteen illustrations, including several pictures by Victor Prout, photographs of landscapes, and portraits. The portraits are not fully authenticated, however, and this ought to be said. The Greek cavalryman (p. 124) is not of the same date as Herodotus; and, as usual in such books, a little more knowledge would have made possible a better selection of pictures.

The Tutorial History of Rome. By A. H. Allcroft and W. F. Masson. Third edition, revised and in part rewritten by J. F. Stout. viii.+438 pp. (Clive.) 3*s.* 6*d.*—There is no need to discuss this book at length. It has stood the test of use, and is now in its third edition. It is a clear, concise, and businesslike work, and the constitutional history is exceptionally well done.

English.

The Magic Hook and other Plays. By Marion L. Thomson. 100 pp. (Horace Marshall.) 1*s.*—Books of playlets for school use are not too numerous or too good in quality where they do exist, probably because few of those who would write such things give sufficient thought to what they would achieve, and also because the dramatic element of such plays cannot be spoken of in the same breath as that which must pervade a play written for the theatre. Nevertheless, Miss Marion Thomson has managed to produce the little book which lies before us, containing three small plays which we unreservedly recommend. The first of these gives its name to the book; the others are "Gretchen of the Mill" and "Merriment's Friend." The great merit of all three consists in the simple, natural, and, for the most part, unaffected dialogue; and it is in this latter respect that we feel inclined to rate Miss Thomson's work highest; because when grown-up people try to write books and plays for children, they almost always adopt a patronising pose and write stilted stuff, which in the mouth of an ordinary unsophisticated child ought to be regarded with horror, and is, indeed, a first-class way of making children into little prigs. She has also avoided that other pitfall, blank verse; all the plays are in simple prose. Some songs and other verse are included of passably good quality. The illustrations will help to an appreciation of the appropriate dress and pose for the characters, and some sensible acting directions are found at the end. This book ought to be widely used.

The Primary Grammar. By R. R. Smithard. 1–84 pp. (Philip.) 1*s.*—For all who wish to teach formal grammar this book and its arrangement are excellent. The work is placed on one side of the open page, the questions on the other. It is a pity that grammarians will continue, to the befogging of children, to tell us that the subject is "that of which we speak." How is a young child to apply a rule like this in analysing "She sells oranges"? Far better is it with the ancient Greeks to start with the predicate. The treatment of weak verbs and of strong verbs

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that end in a dental is inadequate; no child can tell that "feed" is weak and "slide" is strong. Both these difficulties are shirked except by such masters as Dr. Sweet. The habitat of the writer (Cairo) is not obtrusively brought forward, and for English schools the book may be confidently recommended.

(1) *The Retreat of Sir John Moore.* 111 pp. 6*d.* net. (2) *The Taking of the Galleon.* 132 pp. 6*d.* net. (3) *Trips to Wonderland.* 117 pp. 6*d.* net. By Dr. W. H. D. Rouse. (Blackie.)—These are further instalments of Dr. Rouse's really unique series of educational texts, and since Lucian, Lord Anson, and an obscure author like Robert Blakeney are here drawn upon, these texts fully justify their description as marking the highways and byways of literature. They are extremely interesting, and will repay use in class in several important particulars.

As You Like It. By L. R. Boyd. 192 pp. (Chambers.) 1*s.* 6*d.*—This is part of a new series of Shakespeare texts, to be known as the "Academy" Shakespeare. It is well done; and even in these days of multitudinous school editions it will be found to possess all the necessary features of such publications in a practical and adaptable form. The introductory matter deserves special praise.

Dickens's A Tale of Two Cities. By A. A. Barter. xxviii.+368 pp. (Black.) 2*s.* 6*d.*—The idea of continuing this familiar series of reading-books by adding some of Dickens's novels to those of Scott's already published is a good one. The introduction and notes in the present case are all that could be desired, and this story ought to be acceptable in its present form, as it is undoubtedly useful.

Scott's Old Mortality. xxvii.+704 pp. (Macmillan.) 2*s.* 6*d.*—This edition makes a famous reading-book. The introduction has been entrusted to competent hands, and, as we have remarked before of volumes in this series, it is surprising that so much creditable work should be anonymous; the editor's notes are both numerous and good, and the inclusion of Mr. Andrew Lang's adds an additional interest to a very praiseworthy volume.

Studies in Browning. By Susan Cunington. 158 pp. (Sonnenschein.) 1*s.* 6*d.* net.—This little book contains four of Browning's poems, to each of which an "outline study" is appended, and afterwards some few and brief notes. The idea is by these means to supply the elucidation necessary for the due enjoyment and appreciation of Browning's poetry. Miss Cunington's aim has not been to convert the Philistine Briton from apathy to enthusiasm for the most difficult of his poets, but to aid "the literary study of literature." Possibly she may do something in this direction, and this little volume will so serve its turn.

Selections from Addison. By B. Wendell and C. H. Greenhough. lxi.+346 pp. (Ginn.) 3*s.* 6*d.*—We are glad to express the highest praise concerning the editors of these selections from Addison, for the introduction to this book. It is splendid as a piece of critical literature, and the full bibliography which follows is a monument of painstaking research. The notes are a bulky portion of the volume, yet they are never too long, and they represent by apt quotation an enormous range of reading.

Scott's Talisman. xx.+464 pp. (Frowde.) 2*s.*—Another "Oxford" volume; well printed, edited anonymously and well, and supplied with some excellent illustrations which will make it extremely acceptable in class-work if it should be used as a reading-book. Quite one of the best cheap editions in the market.

How to Read English Literature. By Laurie Magnus. 1–206 pp. (Routledge.) 2*s.* 6*d.*—This is one of the many books which are being produced as a result of the Board of Education's activity in the matter of English literature. It is full of interest, the chapters on Chaucer and Shakespeare being extremely good; but if it is supposed that any such book as this will lead a class to study English literature, we think the class-leader will be disappointed. All these books are intended for people who *know* their literature.

History

The History of England from the Earliest Times to the Norman Conquest. By T. Hodgkin. xxi.+528 pp. (Longmans.) 7*s.* 6*d.* net.—Even the most enthusiastic students of our national history must confess that much of the pre-Norman story is tedious reading. There are so many names, and so many of the same name, so much that is obscure, and therefore so many events that are apparently disconnected, that we willingly reach the Norman Conquest, or at best go as far back as Egbert for more than a mere outline. And therefore it is that we are glad that such a period should be treated by Dr. Hodgkin, the historian of Italy and her invaders, whom we know as a master of all the Latin and other literature of the early middle ages. Even he cannot make much of this period "interesting" in the ordinary sense of that word. He speaks in one place himself of "the many Sigeberts who about this time perplex the student of Anglo-Saxon pedigrees" (p. 175); but he states the whole of what is known in clear narrative which will serve as a reference-book for teachers bewildered by varying text-books. We would not, however, be understood to mean that this (the first volume of the "Political History of England in Twelve Volumes") is dull reading. On the contrary, there is much that is new and interesting, and the present solution of many disputed points is here given with clearness. As examples of views which vary from our ordinary guides, we may mention his attribution of Stonehenge to prehistoric times, and the chapter on Britain between Cæsar and Aulus Plautius. Numismatists have revealed to us in that period, not indeed Lear, but they tell us of Cunobelin—Shakespeare's Cymbeline—whose relations with Rome were not unlike those depicted for us by our great dramatist. Much will also be learnt from the chapters on Roman Britain, written as they are in the light of the most recent knowledge of the Roman provinces as a whole, and monumental remains in this country in particular. Even the careers of the best-known men of that period may be here read again with profit; and Dr. Hodgkin turns willingly from the weary details of conquest and of internecine strife to the story of the conversion, the organisation of the English Church, the works of "Alfred at Peace," and the statesmanship of Dunstan. With the reign of Ethelred the Redeless begin the later stages of the nation's decay from the days of Bede and of Alfred. The selfish and even treacherous conduct of its nobles accounted for a large part of the "political incapacity of which the whole course of its history during the last century before the [Norman] Conquest is sufficient evidence" (p. 491). Dr. Hodgkin goes on to say: "A tendency to swinish self-indulgence, and the sins of the flesh in some of their most degrading forms, had marred the national character. There was still in it much good metal, but if the Anglo-Saxon was to do anything worth doing in the world, it was necessary that it should be

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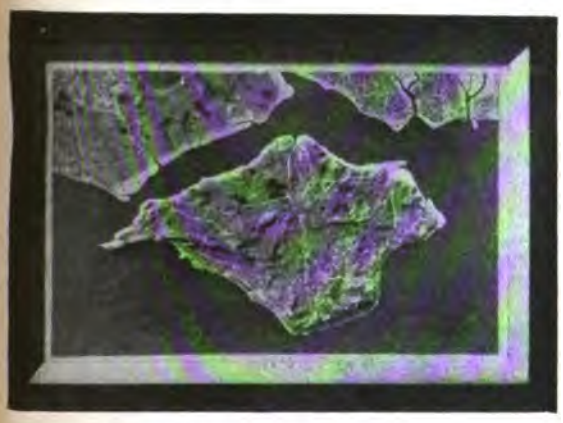
passed through the fire and hammered on the anvil." There are, as in the other volumes of this work, a full account of authorities, a sufficient index, and two maps.

Asser's Life of King Alfred. By A. S. Cook. xii.+83 pp. (Ginn.) 2*s.* 6*d.*—The scholars having now given us a definite edition of Asser, the results of their work are available for school purposes, and Prof. Cook (of Yale University) here gives us a translation based on Stevenson's text. There are an instructive introduction, a large number of notes drawn mainly from Stevenson, and two appendices, viz., one of Alfred's prefaces, and a letter to him from Fulco, Archbishop of Rheims. There is also an index of names. Prof. Cook omits—we think unwisely—the later interpolations, and we are therefore only told of such stories as the cake-burning; but we welcome this cheap and excellent text, and hope it may prove as useful to our pupils as the editor evidently hopes it may be in the furtherance of "honest and capable government in America," to the friends of which cause he dedicates it.

Geography.

(1) *Philips' Nature Series of Relief Models: Isle of Wight.* Size, 17in. by 11in. (Philip.) Framed, 15*s.*—(2) *Philips' New Popular Slate Surface Globes.* 12in. Series. (Philip.) 17*s.* 6*d.* to £1 2*s.* 6*d.* net.—With the resources that are now available in the form of maps, relief models, and cheap but good atlases, there is no excuse for poor equipment for instruction in geography. Messrs. Philip have provided teachers with as good material of this kind as could be desired; and the series of relief models which they have just commenced to publish will increase their reputation for high-class work. The four models now ready reproduce the characteristics of the Isle of Wight, Lake district (northern part), Snowdon district and Menai Strait, and the Norfolk Broads. One of these models—that of the Isle of Wight—is before us, and it is an elegant and instructive piece of work. The limits and general character of the model will be seen from the accompanying photograph. The towns, villages, roads, rivers, and other features are clearly shown, so that a child looking at the model gets an accurate bird's-eye view and sees at once how the directions of roads and rivers are determined by hills and ridges. The steep cliffs on the south coast of the island, and the central ridge of chalk running from Culver Cliffs on the east to the Needles on the west, are faithfully represented. There are no names or scale upon the models, but reduced Ordnance Survey maps of the districts shown in relief can be supplied in frames, to match the models, at five shillings each. Provided with a model and the corresponding map, any teacher who cares about geography should be able to give inspiring lessons on map-reading, and to show that land relief exerts an important influence on natural and other features. (2) It has been urged by Mr. H. J. Mackinder and other authorities on geographical education that a globe provided with a black slated surface upon which maps can be drawn should be used as soon as pupils have elementary ideas of direction. There is really no better way of conveying an accurate idea of the shapes and positions of the continents, provided the teacher can use chalks or pencils properly. The 12in. globes now available can be had without any markings, with lines of latitude and longitude, and also having these lines together with the outlines of countries or with land areas coloured white.



Relief Model of the Isle of Wight.

Mathematics.

The Elements of Solid Geometry. By Charles Davison. viii.+122 pp. (Cambridge University Press.) 2*s.* 6*d.* net.—We are glad to find that solid geometry is gradually having more attention given to it, and welcome this well-arranged book. The course laid down includes chapters on the polyhedron, the cylinder and cone, and the sphere; the selection of propositions seems to be good, and the general treatment thoroughly adapted for the average schoolboy who has made satisfactory progress in plane geometry.

Elementary Trigonometry. By H. S. Hall and S. R. Knight. Fourth edition, revised and enlarged. xv.+415 pp. (Macmillan.) 4*s.* 6*d.*—In this edition the enlargement seems to bear chiefly on the more elementary parts of the course; the book now contains practical exercises in constructing angles with given ratios and in finding the trigonometrical ratios of given angles, while work involving the use of four-figure tables is amply provided for. A set of four-figure tables is appended. In its new form the book is sure to retain its place as a good elementary work.

A New Trigonometry for Beginners. By R. F. D'Arcy. viii.+84 pp. (Methuen.) 2*s.* 6*d.*—A very simple and sensible treatment of the elements of the subject; much use is made of drawing figures to scale, and four-figure tables are employed for the calculations. The number of examples for practice in the solution of triangles and in the applications to the work usually classified as "heights and distances" might with advantage be considerably increased.

Geometrical Conics. By F. S. Macaulay. Second edition. x.+300 pp. (Cambridge University Press.)—In this edition the sixth chapter has been modified, and a new chapter, which may be regarded as a continuation of the sixth, has been added. When studied on the lines laid down in this book, geometrical conics is a much more valuable discipline than it has too often been.

Weights and Measures. (Jaques.)—English weights and measures are certainly not easily committed to memory, and, while we think the simplest method of dealing with them is to abolish them altogether, we must so long as they are in use welcome any means of making it easier for children to master them. There has been sent to us a pack of cards, beautifully printed in colours, that make it possible to combine the amusement derived from a round game with the acquisition of familiarity with the tables of weights and measures. Whether children will like the game can only be tested by trial; if half a dozen children played the game for a few evenings, the probability is that they would get a better knowledge of the tables than most of them now possess. The cards cost 1*s.* per pack.

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Arithmetical Wrinkles. By J. Logan. 84 pp. (Sonnenschein.) 1*s.*—The book is stated to contain "Notes on the Various Rules; Solutions of Knotty Problems; Hints on Methods of Working; Mensuration Rules, Tables, &c." For ourselves, we have never derived much benefit from books of this type, and we generally prefer to recommend pupils to study any good text-book. For those, however, who are of a different opinion, this book will provide a good deal of useful information.

Continuous Mental Arithmetic. By G. F. Smith. 128 pp. (Nelson.) 2*s.*—The book provides a graded course for all the classes of the elementary school. The exercises seem to be well arranged and give ample practice.

The Elements of Geometry in Theory and Practice. By A. E. Pierpoint. viii.+156 pp. (Longmans.) 2*s.*—This work is drawn up on lines that are now common. An introductory section of a practical character is followed by a theoretical section based on the Cambridge syllabus, though going in some ways beyond it; the third section deals with problems. The range is not very wide, being, so far as the theoretical work is concerned, about that of Euclid I. 1–34; the treatment, though not showing many special features, seems adapted to meet the needs of beginners. The exercises are very numerous, and usually simple.

Science and Technology.

The Elements of Geology. By Prof. William H. Norton. x.+461 pp. (Ginn.) 6*s.* 6*d.*—This is a text-book for beginners which, as is customary, deals with physical geology first, and afterwards gives a descriptive historical outline of the story of the earth. We are glad to notice that the young student is urged, in addition to reading this book, to observe as much as possible in the field, and to apply laboratory methods to the examination and determination of specimens. Being intended primarily for students in the United States, special attention is given to the geology of North America. For this very reason the volume should prove useful as a work of reference in geological classes here, providing students with striking examples of geological features in addition to those of their own country. The work is beautifully and profusely illustrated, and though the examples depicted are mostly American, some of the illustrations are of scenes in this country which have already been utilised in certain of our text-books. The book is accurate, interesting, and well arranged. It may be recommended with confidence.

The Founders of Geology. By Sir Archibald Geikie. Second edition. xi.+486 pp. (Macmillan.) 10*s.* net.—The present work differs from the first edition, which has been out of print some time, in that it includes not only a more detailed discussion of the history of geological science during the seventy years from the middle of the eighteenth to the close of the second decade of the nineteenth century, but also a sketch of the earlier progress of geological ideas from the times of ancient Greece downwards. As a stimulating account of the pioneers who built up the science of modern geology, the book might well find a place in the libraries of schools where science is taught.

First Lessons in Botany. By C. A. Cooper. 40 pp. (Blackie.) 6*d.*—We have not come across many books of this size containing so much botanical information so simply—yet so accurately—expressed. Its sub-title, "An Introduction to Nature-study," is, however, not specially applicable.

The "A.L." Food-Values Diagrams. By A. Ravenhill and E. M. Morris. Six charts, each 42in. by 33in. (Leeds: Arnold.) Each, 3*s.* 6*d.*; set, 12*s.* or 18*s.*—In these excellent charts, proteids, fats, carbohydrates, minerals, &c., are shown in different colours, exhibiting in a very striking manner the proportions of each in some of the commonest articles of food. Perhaps the most interesting is No. 2, which shows the amount of each proximate principle required daily at different ages. We think the charts would gain in value by the omission of the "explanation" that proteids are body-building and flesh-forming, and that carbohydrates and fats are heat- and energy-giving materials.

First Studies of Plant Life. By G. F. Atkinson and E. M. Wood. xiv.+266 pp. (Ginn.) 2*s.* 6*d.*—This admirable little book—one of the Cornell nature-study manuals—was originally written for American students. Miss Wood has done a useful work in adapting it to the needs of British readers. Types, names, and expressions that were essentially American have been deleted, and British types and names substituted. The illustrations have also undergone a similar revision. The result is a book that may be cordially recommended for use in our schools. The language is simple yet accurate, the topics are well chosen and cover a wide field, and the illustrations are numerous and beautiful. The chapters on fruits are hardly on the same level of excellence as the rest, and the statement that elms, maples, and pines have all winged seeds is unfortunate. Further, it may be mentioned that not all beans germinate in the manner described in Chapter I.

Miscellaneous.

The Bending of a Twig. By Desmond F. T. Coke. 314 pp. (Chapman and Hall.) 6*s.*—Everybody, no doubt, has read "Eric," "Tom Brown's School Days," and certain other books of the same kind, to which the modern schoolboy must add "The Hill" and "St. Winifred's," not to mention "Stalky and Co.," if his mamma will let him. Mr. Desmond has described the story of a modern schoolboy brought up at home by foolish parents, and sent to school at the age of thirteen with no more knowledge of the world than is to be obtained from these books. Poor Marsh (the boy's name) is also handicapped by the Christian name of Lycidas, and he is a boy of only average intelligence. He goes to school chock full of all sorts of illusions, not certain whether he is to be Eric, or Russell, or Tom Brown, or that little beast Stalky, but quite certain that, whatever happens, he is to distinguish himself and become a hero. His adventures may be imagined. The poor boy makes a fool of himself from the first, and he never quite shakes himself free from the ludicrous mistakes of his first year. But, underneath his foolish outside, there is a simple, affectionate heart and genuine grit. So, although "he is not good at games," nor brilliant intellectually, he works his way up until he becomes head of the house. The great difficulty of school stories is that so little happens, and there is nothing to give unity to the plot; but our author, by the ingenious device of making his hero behave like a fool, has provided a series of events which make a very readable story, and, by showing how the boy's character grows, how he rises superior to mistakes and humiliations, has given unity to the whole. It is a very entertaining tale, but thoroughly wholesome all through, without mawkishness, sentimentality, or cant. Older readers will be much amused by his criticism of the other schoolboy tales which we have mentioned. The scene of the story is laid

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at Shrewsbury, and the book is illustrated by a number of photographs of that school. We must take for granted our author's slang and local colour, as we had not the good fortune of being educated at Shrewsbury. But we care little for that in comparison with the descriptions of boy-life. The boys live, and talk naturally. One cannot but be struck by the paramount importance of "games" in public-school life. No one seems to make any attempt to leaven the young barbarians with intellectual influences. Mr. Desmond has scored a success with his book.

Industrial Efficiency. By Dr. A. Shadwell. Vol. I., xiii.+346 pp.; Vol. II., x.+488 pp. (Longmans.) Two volumes, 26*s.* net.—The comparative study of industrial life in England, Germany, and America, contained in these two volumes, is of wide interest and prime importance. The books contain much information of value to students of geography and education. The first volume, for instance, is devoted almost entirely to the consideration of the chief industrial districts in England, Germany, and America, and the influences of natural conditions upon their rise and development. The characteristics of the people in the various districts, nature of the industries, and causes which have contributed to progress, are described clearly and with the power that comes from personal knowledge. The chapters which appeal particularly to us in the second volume are those on elementary and technical education. So many erroneous ideas exist as to the relative positions of the three countries in this respect that the fair comparison of the facts is very welcome. The teaching staff is a weak point in American schools. In 1901 there were 306,063 women teachers and 123,941 men, and the preponderance of women is increasing rapidly. The average annual salaries paid in all the States in the same year were—male teachers, £114; female, £96. In Germany, however, the teaching staff is one of the strongest points, and the teacher has an official position and professional standing not found in England or the States. As to the characteristics of the three peoples, Dr. Shadwell says:—"The German method of advance is by careful, well-considered steps; the American by brilliant leaps—it is much quicker, but sometimes lands in the wrong place. The English come between. They are less—very much less—methodical than the Germans, less alert and enterprising than the Americans." The books will be read with pleasure and profit by many students of material progress; and for the sake of accuracy it is to be hoped that writers who desire to compare conditions and achievements in England, Germany, and America will consult this work before doing so.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Military Training in Schools.

Have those who so widely advocate military training in schools really considered the matter in its purely educational bearings? We as teachers cannot take our instructions from a particular sect of military experts, or from a certain school of politicians. We have to ask whether this training is appropriate to the nature of the boy and will conduce to his welfare, physically, intellectually, and morally; and not only so, but whether it is the best possible way of thus compassing his physical welfare and the rest. Unless it will stand this test, it has no business to find a place with us.

At this time of much educational construction, and many hopes, I would urge that this test be applied rigorously:—(1) Are the methods and aims of military training such as to provide that well-adapted and scientifically ordered physical education which the boy needs? (2) Will they help to bring into our schools that intellectual keenness and independence that we desire? (3) Will they contribute to that moral outlook which is part of the great ethical end of education?

It is on this last point that I would dwell for a moment. What are the characteristics of the raw material we have to mould? One is a strong combative instinct; this needs, not goading, but guiding, that it may grow to serve better purposes than the natural man seeks after. Our youth are ready enough to exalt force as the most glorious factor in life, to think of it as the sovereign remedy for the world's ills. This view has to be tempered and elevated, not ingrained.

Lord Roberts desires to stimulate patriotism; a grand end—but are we to be content with a mere animal or tribal instinct, or a conception based upon nothing better than the fine fighting qualities of the British race? Is this the wide sympathy and enlightenment that education is to bring? In our history teaching, a good and true development has been to give our military annals less exclusive prominence, and to bring out truer elements of greatness, heroism, and national progress. Some reaction to this has flooded the market with many patriotic reading-books which aim in the crudest fashion at arousing a patriotism of the most barbaric type. But let us assume that the better way is really gaining ground; what will it avail if the glamour of the military art is brought into the very lives of the boys?

It is not quixotic to maintain that our schools should be leaders in mankind's advance; they are the repositories of the hopes of the future. Ought we not to be careful that these hopes do not suffer at our hands?

Bootham School, York. F. E. Pollard.

P.S.—The above was written before the appearance of the March issue of The School World. "W. B." in his letter admits, or glories in the fact, that "every boy worth the name" is at heart a soldier. It might be said that most boys are at heart, at one stage or another, selfish or even cruel. What then? "W. B." says, "Why object to teaching it in school, then?" But the main point is that boys should go into the world with, at the very least, an unbiassed mind towards the question of war. The workers and the commercial classes are moving strongly towards international peace. Are we so to train our young men that war seems to them a permanent and unquestioned institution of the Christian world, like the other aims and virtues that are inculcated in youth?

F. E. P.

The Use and Abuse of Paraphrase.

In his interesting article on "Paraphrasing" in your February number, Mr. J. H. Fowler admits the danger that such exercises may involve a desecration of the highest forms of literary art and a lowering of the standard of style. This objection, however, may be obviated, in the case of prose at any rate, by the simple expedient of "re-translation." In June, 1904, a useful article was published in The School World in which the writer recommended the turning of pieces of crude English ("translated" by

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the master from standard authors) into prose as near the original as a boy could get. A combination of this method with the paraphrasing exercises advocated by Mr. Fowler would possess the advantages of both, with the additional advantage that the work would be done entirely by the boy. The device of re-writing an author's ideas in language as much like the original as a boy can remember, although it has the sanction of R. L. Stevenson, is too much open to the objection that it is a mere "playing of the sedulous ape," but a re-writing from a "translated" paraphrase would be free from this objection, and would not only serve to show the boy the inferiority of his own composition, but would also prove an excellent training in style. Perhaps some of your readers will give us their experience of a trial of this method.

W. W. Sawtell.

Secondary School, Battersea Polytechnic, S.W.

Parallel Straight Lines.

It is satisfactory to find that Mr. Godfrey admits in substance that the definition of direction, which I suggested in the March number of The School World, contains the parallel-axiom, because it was expressly framed to do so.

The definition is frankly based on experience, as Lobatchewsky proved that Euclidean parallels are based; the assumption that "pairs of lines exist making equal angles towards the same parts with every transversal" is sufficient to distinguish Euclidean from other geometries, and this Mr. Godfrey admits is contained in the definition. (Mr. Godfrey says latent, though I gave it explicitly.) The treatment from this definition is therefore rigorous.

What I have claimed is, not that the use of direction enables us to prove the parallel-axiom, but that a suitable definition of direction contains it, and that the consequent theory is rigorous.

E. Budden.

Macclesfield.

While it is unnecessary and often extremely inadvisable on pedagogic grounds to attempt the rigidly logical development of a scientific subject when introducing it to children, the logical relations have still to be borne in mind by the teacher from the outset, and they must act as an important determining factor in deciding the kind of treatment which is to be adopted. On these grounds most teachers of elementary geometry no doubt welcome any discussion which may help towards a settlement of the vexed question of direction and parallels, and it is for this reason that I venture the suggestions which follow.

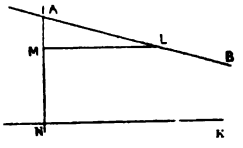
It is perhaps safe to say that teachers who do make direct appeal to the idea of direction never find it necessary —for the sake of being clearly understood—to explain what is meant by "same direction" and "different directions." Surely this is because the idea itself is intuitive, and may be found universally among the ideas of space which all children possess. Does it not follow that a science of space which attempts to ignore direction will seem artificial and in some degree out of touch with reality?

On the other hand, if we begin frankly with the assumption that this idea needs no explaining, it should be possible for the development of our science to be simple and natural. It is such an assumption that is here advocated. However, as in the case of temperature in the science of heat, and mass in mechanics, the use of the idea contributes little to progress until it is made quantitative; and for this purpose, just as we must associate lengths or efficiencies with temperatures, and define differences of temperature as measured by differences of either of these, and mass ratios similarly in terms of velocity changes, so here we have to seek some quantity with which to associate direction, and in terms of which we may measure differences of direction. The required quantity is, of course, angle. It is important to note that while an angle thus *measures* a difference of direction, it is not to be identified with a difference of direction, any more than an increment of length—expansion—is identified with an increment of temperature.

We may begin by defining a straight line as one any portion of which is in the same direction as any other portion. Thus a straight line is to be taken as representing a direction. It is then axiomatic that only one straight line can be drawn through a given point in a given direction. Our idea of "same direction" being regarded as safe, we may now move straight lines without changing their directions, and hence by superposition we have that a transversal makes equal angles with parallels—lines in the same direction.

The difference between two directions is now defined as measured by the angle between two intersecting straight lines drawn in these directions. The rotation proof of I. 32 now holds, for the turning—changing of direction—only occurs at the corners. The proof fails for a spherical triangle, since direction alters during progress along sides.

That non-parallel lines meet may be proved as follows:—First, only one line can be drawn through a given point at right-angles to a given line, and the two intersect, since the usual construction and proof may be used in which the line is obtained by joining the given point to a point in the given line.



Now let AB and NK be in different directions. Draw $AN \perp$ to NK, and through L in AB draw $LM \perp$ to AN. In AB take R such that $AL : AR = AM : AN$. Then $NR \parallel$ to ML $\therefore$ $NR \parallel$ to NK, *i.e.* coincides with it, $\therefore$ AB meets NK in R.

G. Goodwill.

High School, Liverpool Institute.

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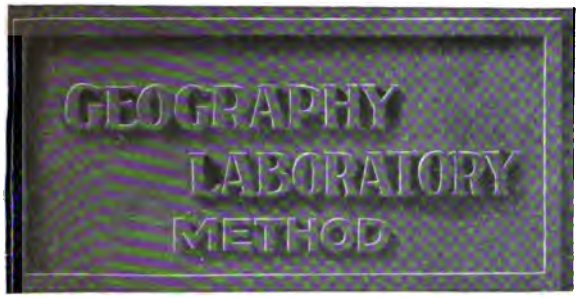

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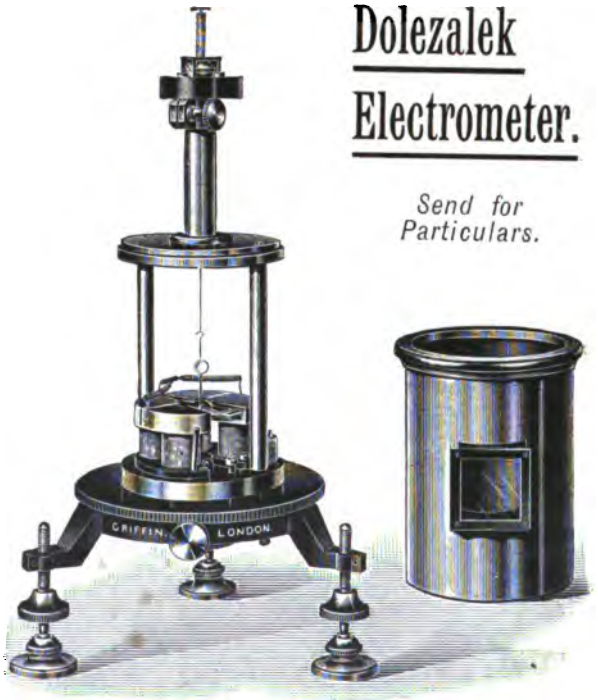

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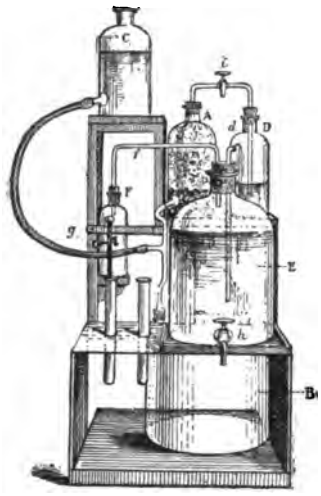

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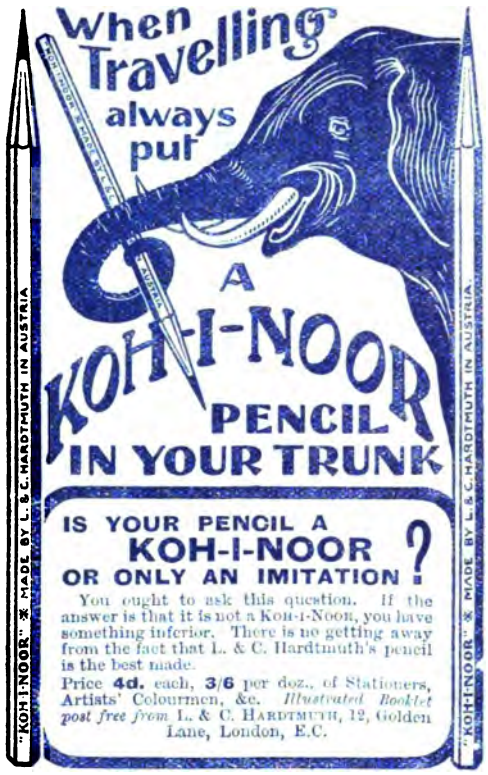
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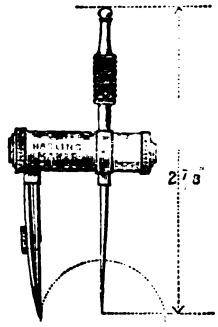

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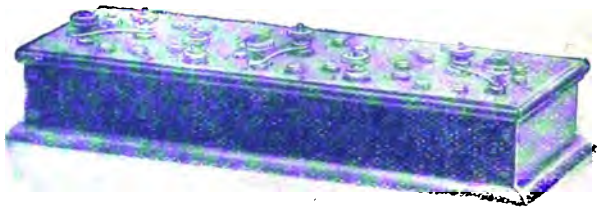

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State. We have passed the line at which it might be said that England's dignity is compromised by her backwardness in this matter; we have reached the stage at which it must be said that England cannot afford to remain in the rear.

The recent establishment of universities and the increased grants to university colleges have partly removed the reproach, that this country is content to depend upon the pious founders of the Middle Ages for its supply of higher education. But very little has been done for the great and important educational field which lies between the universities and the elementary schools. Entirely gratuitous secondary education is probably no more desirable than it is at this moment feasible; but modern instruction is so costly, that it is hopeless to attempt to make it self-supporting. The community must come to the assistance of the individual, not for his sake, but for its own. A clearer recognition of the situation, and a more direct attempt to grapple with it, are features which would be welcome in an Education Bill bearing the date, 1906.

"Register of teachers no longer required" is the parliamentary draughtsman's curt announcement of the approaching end of the Register muddle. No doubt, when the Board of Education is less strenuously engaged, we may look for a Register which will be acceptable to most if not all branches of the teaching profession; by this time the Board must be in possession of a chart very fully marked for rocks and shoals. Still, the Bill leaves the point in doubt, as it does the position of the elementary training colleges, except, perhaps, in so far as the principles of the Bill determine the latter. We have in these columns commented upon the duty of the Board of Education to make some precise statement concerning the extent of the student-teacher's obligation to give service in public elementary schools. We are interested, therefore, in noting that clause 34 lays it down that a *local authority* may exact an undertaking from student-teachers whom it trains, or assists in training, that they will remain in the service of the authority for any time not exceeding seven years. A general adoption of this clause with a strict interpretation of its terms will have the effect of well-nigh destroying the national character of the elementary training colleges, which will become institutions for local purposes only, with the consequent narrowing of aims and means inseparable from the limitation. This is scarcely a statesmanlike handling of the question, How should the teachers of the majority of Englishmen be educated? Meanwhile, the Board of Education passes on the duty of being explicit to some one else.

Apart from what has since happened, the speeches on the first reading made it manifest that this Bill could not be regarded as final. There can be no finality while the religious difficulty remains unsolved. Yet, in spite of failure in this respect, the Bill makes a decided step towards a settlement. We have been told from the platform and by the Press that the English parent will be or will not be content with this or that; that he urgently demands or does not demand so-and-so; hitherto, there have been no unequivocal pronouncements on the religious question from the parent himself. Does he desire in the popular schools "simple biblical instruction," or "definite, precise religious teaching," or is he merely indifferent? The Bill furnishes an *experimentum crucis*, by setting up machinery which will show what the majority of the parents in a given locality really desire in this matter; it also provides the means of giving effect to that desire. Of course, this does not solve the problem; the principles of religious liberty demand that the interests of minorities also should be safeguarded. But to know what the parents unquestionably want is an indispensable preliminary to a real solution of the religious difficulty.

THE PRINCIPLES OF PROMOTION.

By J. L. Paton, M.A.
High Master of Manchester Grammar School.

THE basal idea and purpose of education is growth and progress. School is a place where a child with special helps and facilities has to develop through all the stages of civilisation, through which the race as a whole has progressed by its own efforts. Each new generation has to learn in twelve short years what it has taken the race collectively untold æons to discover. The schoolboy of to-day must have, as matters of knowledge "familiar as his garter," facts and principles unknown and unsuspected by the foremost minds of one hundred years ago, and for that reason, if for no other, advance of civilisation postulates continually further extension of the school period and such acceleration of progress during this school period as is compatible with soundness of knowledge on the part of the learner and with his powers of growth.

The question, therefore, of the rate of progress, both absolute and relative, is all-important to those who have to plan out, direct, and control the process of education; it is of the essence of the problem.

On the threshold one is met by the conflict of two principles on which the whole problem hinges. They may be called the principles of Each and All. The principle of Each requires that every separate individual scholar shall have full scope for the ability which he possesses; it is not fair to him that he should be checked in his progress by being coupled up with scholars who are of inferior ability, and forced to move at their slower pace, instead of pushing ahead at his own faster rate of progress. The principle of All requires that there should be grades in the school, taught together in separate classes, and moving forward at a uniform rate of progress according to a fixed plan of instruction. Without this principle of classification we have not a school, but a mob; not an army, but a horde.

The first problem of organisation is to combine both these principles, both right in themselves

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and both essential, but leading to pernicious results when either is pushed to the exclusion of the other.

In the enormous schools which have grown up under the public elementary system, and may grow up under the public secondary system, we can see that each is sacrificed to all. Everything is mapped out and standardised from the year of entry to the year of leaving. The child enters at the bottom at the regulation age, is taught the regulation curriculum in the regulation order at the regulation rate, and comes out at the regulation time the regulation product. What else can he be? The children pass through a kind of human biscuit factory which has performed upon them certain specified processes and turned them out, as nearly as mechanical precision can effect it, all of one size, weight, colour, and taste, and all bearing the recognised stamp, "made to order." This is the administrative ideal of promotion and progress, the Act of Educational Uniformity against which Mr. Adkins so vigorously protests in *Tekel*:—

"The question to be solved is, how far the methods and conceptions of the older dispensation, framed as they were in the interests of the dullest, are to obtain under the new; whether—to put it in a colloquial form—the tail shall continue to wag the dog, or the dog begin to wag its tail; compromise is impossible. Even a genius can be made to rule red-ink lines, but is that enough?"

Our system is not, of course, as a matter of fact, so rigid as the satirist implies. It is not an uncommon thing for a clever lad to get through two or even three standards in one year. A discriminating head teacher has no difficulty in getting an inspector's permission for such an arrangement so as to give the clever boy his head in this way. But, speaking generally, the danger of the administrative ideal is the repression of the clever in the interest of the mediocre—the sacrifice of each to all.

On the other side we have in some private schools and some others the sacrifice of all to each. In the school, which is always preparing for examination and endeavouring to swell the record, the clever boy is taken and specially fattened and primed with spoon feeding as though for a prize at a cattle show. What happens to the rest does not much matter: all are sacrificed to each. This is what we may call the racing-stable ideal or the advertising ideal of education. It has had a great vogue in England with its strong sporting and individualistic temperament. Edward Thring was never tired of tirading against it. He was as zealous as Mr. Robert Blatchford in his defence of "the bottom dog." "Let the ordinary, average, mediocre boy have his chance; he too has his right to your teaching, the greater right because the greater need. The clever boy can get along pretty well for himself in any case; the dullard can't. It is wrong and dishonest to sacrifice the whole class to the brilliant star at the top, to pay attention to the individual and neglect the all." In Thring's day the tendency of the secondary school was to sacrifice the average to the clever child. Most secondary schools, whether public or private, were more or less racing stables which entered their picked and highly trained thoroughbreds to the Oxford Local Stakes, the C.O.P. handicaps, or the £80 Scholarship steeplechases at the university. Nowadays our danger probably lies in the opposite direction. With the Board's new secondary-school regulations promotion must be according to almanac, and if a clever boy is pushed through more quickly it means a loss of grant; if he is a third-year boy he can only earn a third-year grant even though he be doing fourth-year work.

Between these two opposing poles the organiser has to steer his course. On the one side biological science tells him that for progress he must allow the utmost freedom for the development of individual variety and differentiating qualities, and also give the utmost scope for the selection of the fittest. "In the ideal democratic school," says the scientific expert, "no two children would follow the same course of study or have the same tasks, except that they would all need to learn the use of the elementary tools of education, reading, writing, and ciphering. . . . The different children would have hardly any identical needs. The pretended democratic school with an inflexible curriculum is fighting, not only against nature, but against the interests of democratic society."

On the other side, if he attempts to satisfy the man of science he finds that he wants an unlimited supply of teachers with the most varied accomplishments. Each boy becomes a class unto himself, and the result is a chaos, not a school. Whichever principle he adopts to the exclusion of the other leads him wrong, for the simple reason that each principle is only partially true. Behind the administrative ideal is the true principle of human solidarity and the organisation of human life for common ends; behind the biologist's ideal is the true principle of natural selection. But the administrator forgets that human beings are infinitely diverse in their characteristics and in their rate of progress; the biologist forgets that he cannot apply to child-training the ruthless procedure of the elimination of the unfit which he finds in nature, that each human life has an infinite value, and therefore no single one may be "cast as worthless to the void."

The school must be graded and classified; that is certain. And yet the organisation must be kept mobile to the inner life of the organism; that too is certain. How to achieve both these things—that is the rub.

For clearness, it will be necessary to divide the school training into three periods—the first, up to the age of twelve, the elementary period; the second, from twelve to sixteen, the lower secondary period; the third, from sixteen to eighteen or nineteen, the higher secondary period—merely noting that the ages here given are not to be rigidly interpreted. John Stuart Mill will be doing at the age of seven what the clodpole will be struggling through at the age of seventeen.

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In the first period there is no difficulty about curriculum; no option or variety is required. Elementary education, as Prof. Sadler says, should contain in solution all the elements that are demanded by the different varieties of higher education. There are the three R's, the tools of education, which all must have; there is music and gymnastic, as the Greeks would say, including under gymnastic the training of hand and eye, including under music the love of poetry and the cult of the mother tongue; there is also natural science, which should at this stage be confined to nature-study. As regards promotion, the very numbers which seem to demand regimentation are really the greatest help to differentiation. If classes are reduced to reasonable dimensions there should be three classes for each year, graded according to their rate of progress into (1) quick pack, (2) medium pack, (3) slow pack. The quick pack will probably cover in one year twice the ground that is covered by the slow, and be ready for promotion to secondary work at the age of ten, while the slow pack will not be ready for that promotion till the age of fourteen.[1]

In the lower secondary period differentiation will be necessary. We now make a beginning with algebra and geometry, and many boys who are slow at languages will discover special ability in mathematics. These boys must have their head or else be kept back marking time, which is another way of saying wasting time. The whole of this section of the school must therefore be separately classified for mathematics, and, inasmuch as the early physics are necessarily correlated with the mathematics, the separate classification will necessarily include the physics and later the chemistry. In other words, boys will work according to their forms at their English subjects and languages, but will work according to separate sets at mathematics and science. Here too, if numbers permit, the problem of promotion will be solved in the same way as railway companies solve the problem of their traffic, by providing an express line and a goods line in the forms. In the sets it is not necessary, for the variation of individual speed is already provided for.

The *terminus ad quem* of the lower secondary period will be some examination of the standard fixed by the matriculation of London or the joint board of the northern universities—soon, it is hoped, to become interchangeable. The selection of some such *terminus ad quem* will fix a certain minimum attainment in both mathematics and languages, and prevent the boy who is good at the one from unduly neglecting the other. The Board, which vetoes outside examinations during the four years' course, rightly admits the external test as a kind of audit at the end of it.

Once past the matriculation standard, specialisation is both admissible and desirable. Here our "slow pack" has disappeared altogether. The members of it have come to the end of their tether, so far as school knowledge is concerned; not improbably, they have also come to the end of their school age too. We have now boys of sixteen or fifteen, in exceptional cases even fourteen years of age, who have carried forward their studies both in languages, science, and mathematics to a respectable standard of attainment. They have also had an opportunity of showing in which direction their special aptitudes lie. The higher stage of secondary education must give full scope to the development of these special aptitudes, and must have definite reference to the future career or profession. The age of sixteen in our curriculum corresponds as nearly as may be with the stage of physical development when a boy becomes a man, and, as a man, looks forward naturally to the serious side of life and livelihood. The specialised courses will be manned with what we may call the "honours" pupils, and will be such as fit a pupil to enter on a good honours course at the university or other institution of university rank such as a higher school of engineering or of commercial science. These courses will provide the sixth forms, the crown of the secondary-school works, pupils who have caught something of the passion for knowledge, who value learning for its own sake, who have the sense of perfection in their work whichever it may be, who work with their master as scholars with a scholar, whose conceptions of life and duty are generous, who are the natural leaders of the school society and fit for the responsibility of direction and control.

Perhaps the whole scheme can best be set out, or at any rate made clearer, by the means of a diagram:—

<table>
<tr><td>Elementary
6 standards</td><td colspan="2">Quick pack
4 years</td><td>Medium pack
6 years</td><td>Slow pack
8 years</td></tr>
<tr><td>Age of promotion to Secondary work</td><td colspan="2">10</td><td>12</td><td>14</td></tr>
<tr><td rowspan="2">Lower Secondary
4 grades</td><td>Grades
1
2</td><td colspan="2">One Modern Language</td><td rowspan="2">Separate classification throughout according to attainment for
A. Languages and English subjects
B. Mathematics and Science</td></tr>
<tr><td>3
4</td><td>Latin</td><td>Non-Latin</td></tr>
<tr><td rowspan="2">Higher Secondary
3 grades</td><td colspan="4">Specialised curricula according as bias is thrown on</td></tr>
<tr><td colspan="2">Mathematics and Science</td><td>Modern Languages and Commercial Subjects</td><td>Classics</td></tr>
</table>

This scheme provides a workable mean for a school of any dimensions between the German system of strict grading, by which all subjects must advance at the same speed, and what is known in America as the Pueblo system, which prevailed for many years at University College School, and provided separate classification for each boy in each subject taught, *éducation à la*

[1] In French elementary schools it is not uncommon for a boy to get his *Certificat d'Études primaires* at the age of eleven, though the usual age is thirteen.

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carte, as it has been called. The scheme seems to furnish that elasticity which is necessary to our national temperament, which is in the line of our national traditions, and is postulated by our national needs. It provides for expansion both longitudinal and latitudinal. The cycles of age correspond to those prescribed by the new French regulations, and seem indeed to be indicated by nature. It postpones the critical choice between classical or modern side till the third year of the secondary-school course, obviating thereby the risk of change being necessary at a later stage, and allowing greater facility for careful grading below the introduction of Latin, where grading is most important. It provides an open career to talent. The clever boy who gets out his answer while the other boy is chewing his pencil goes ahead; he is not tied by the leg to the slowcoach, and so degenerating into habits of intellectual loafing and go-as-you-please. The slow boy, on the other hand, is not unduly pressed nor made unpleasantly and unhealthily conscious of his own inferiority by the ever-present comparison with his more gifted schoolfellow. In the upper specialised division of the school, where classes are necessarily small, the teacher may reasonably be expected to give a special chance to boys who can go ahead, and extra help to the less apt who need to go over a thing more than once.

But no system, however carefully thought out, can be devised which can be wound up like a piece of mechanism and then allowed to run of itself. Perpetual vigilance and readjustment are necessary. Measles and mumps, if nothing else, upset our best-laid schemes. At the end of each term the headmaster will have to confer carefully with the form teachers to see which boys are lagging behind and need to be transferred to slower or lower divisions, and which boys are getting ahead of their class and should be transferred to higher and quicker divisions. Human nature can never be governed by any mechanical system; however perfect that system appears on paper in its regularity, system, and uniformity, it must, unless humanised in practice, violate some of the finest susceptibilities. The school is a garden, not a factory, and the human factor, both in teacher and taught, is the *unum necessarium* for the fulfilment of its function in the body politic.

The Life of Our Lord. By G. P. Trevelyan. x.+109 pp. (Rivingtons.) 8*d*. net.—This booklet, which is the first of a projected series, is written for children of the Church of England, which sufficiently, perhaps, explains its point of view. It is not original in its aim of leading "children to read, understand, and love the Gospel story," because we believe every book of the same kind which has passed through our hands for years has been compiled with a like end in view. But the book follows a method which is novel, and, we may also add, interesting; and it ought to supply those (and they are many) who cannot live without definite dogmatic instruction, with sufficient information to enable them to understand what is implied by adherence to that particular school of the Church of England, the teaching of which it enforces with admirable directness and point.

IS SCHOOL SCIENCE WORTH HAVING?

By Prof. H. E. ARMSTRONG, Ph.D., LL.D., F.R.S.

NO; never! Well, hardly ever!

Although during more years than it is now pleasant to recall I have been a persistent advocate of the introduction of the teaching of scientific method into schools, it is daily becoming more and more evident to me that, excepting in isolated cases, school science is of little value: of several hundred students who have been under me during the past half-dozen years or so, coming from secondary schools all over the country, extraordinarily few have given proof that they had derived any real benefit from their training; it has been clear that neither has their curiosity been awakened nor have they acquired the habit of working in a methodical and honest manner. A boy entering college from school, who knows what an experiment is and who understands how to set about making one—who has some sense of exactness and has been taught how to use his fingers and to be careful and neat—who can without hesitation write out a faithful, legible account of what he has done which is readable—is a living wonder. Yet our main object is supposed to be to teach the experimental method—the art of exact experimental inquiry. The worst feature of all, too often, is that a nescient attitude has been engendered which makes recovery at college from the bad habits acquired at school almost impossible except in the case of the very few who are really gifted with genius. The greatest sufferers perhaps are those who have been prepared for scholarships and in consequence have been converted into prigs of the worst type: knowing nothing of fundamentals, these fancy that they have mastered their subject and are above going back to simple hodman's work; but few of them recover their mental equilibrium or learn to work honestly. Years of valuable time are being wasted from lack of sound preliminary training and neglect of practical methods.

While expresing these opinions, I am aware, indeed no one is more fully prepared to admit, that a strong undercurrent of improvement is already flowing and that a multitude of earnest workers is scattered throughout the country many of whom are pursuing their way under conditions which are well-nigh exasperating. I even believe that, far as the science teaching in schools may be from the ideal, it is in advance of most of the other work. But unfortunately there is no accepted organised body of opinion to guide teachers generally.

In all modesty be it said, *we know* that our subject may be made the means of affording broad mental and moral training of higher excellence than can be given through any other branch of school work; therefore we must not pause in the struggle to reach the light. Unless we are prepared to write ourselves down as utter failures and to stand disgraced before those who muddle through somehow as teachers of those

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other subjects upon which the light of pure reason is not shed, we must bestir ourselves and improve our style—rather let me say, acquire some inkling of style. This is very difficult, I know, after going through the process and being conscious myself of having offended only too frequently against my own canons of belief. It can only be done by constant and stern self-criticism and if a strong desire exist for self-improvement.

I believe the fundamental fault to be that very few teachers know what an experiment is—having never carried one out; that very few have any true ideal in mind. The course which the majority go through has no claim to be regarded as an experimental course—as it involves nothing more than following instructions and the practical verification of statements made, the element of inquiry and reflection being altogether left out. No detective could ever be trained by a course such as we adopt in teaching boys in school: that is to say, if directions were given for his every act, if every step he was to take were to be anticipated, and his foot put down into every one of them—if the element of motive were entirely omitted from consideration. Knowing what can be done by the gradual development of a knowledge of method, I am satisfied that we shall make no progress until we place knowledge of method before results. We *must* teach our pupils to understand the true and full meaning of the one verb—to experiment.

Teachers in schools are not so much to be blamed, however, as are those who sit in high places at our seats of learning. The old-fashioned cookery-book-recipe style of teaching still prevails at nearly all these; and there is real danger of our becoming blatant dogmatists: ions, electrons, atomic disintegration are talked of as realities and verities, not as wholly tentative hypotheses, on a basis of evidence the equivalent of which would not pass muster even in a police court; and babes and sucklings are taught to use a technical jargon of which they have no understanding, while ravings on the origin of life are allowed to issue from a university without one word of expert warning being uttered in protection of an all too gullible public. In fact, no proper attempt is made to teach truth in the sense defined by Emerson in his essay on Intellect. Outsiders already see the coming danger. Prof. Sadler, for example, in his most appreciative essay on "Science in National Education" which has just been published, speaking of Herbert Spencer's work, remarks:—

"Therefore to his mind (and similarly to Tyndall's and to Huxley's) scientific teaching seemed inseparably connected with discovery, with the overthrow of false authority, with liberation. But it is quite conceivable that in future, when physical science sits on the throne of undisputed authority, she may wittingly or unwittingly impose upon education as heavy a weight of prescribed belief as did any earlier *régime* and may come herself to need, as an educational corrective, the sound doctrine of her earlier protagonists. All true education strikes a balance between authority and independent search, a balance for which there are no set rules but which the tact and insight of the true teacher establish afresh for each mind according to its needs, to its stages of development and to the circumstances of its works. It is therefore expedient to have at all times a due place in education for that subject or group of subjects in which, at the time, the most strenuous movement of inquiry and investigation and the keenest revisal of old conclusions are going forward. The spirit of search is caught from teachers who are themselves searching; not simply by artificially reproducing the methods of search in provinces of knowledge which are enjoying the peace of unchallenged acceptance.

"The greatest educational service which the scientific movement has rendered is in emphasising certain principles which should guide the teacher in his methods of work."

After defining these, he concludes:—

"Thus the fundamental issue is that of truthfulness—easy to speak about, most difficult of all things to practise in some of the intellectual questions with which the teacher deals and in the circumstances in which the teacher has to work. And yet the touchstone of the noblest and of all memorable teaching is unflinching veracity. This it is that forms character, because it is the expression of the sincere character of the teacher—character, as Goethe said, forming character."

Surely, in teaching science in schools, our chief object is to form character—above all to promote a thoughtful, observant and reticent attitude of mind, to develop a logical spirit and some measure of dexterity. If we admit this, we shall agree with Prof. Sadler that

"Greater intensity of work within narrower limits but with more training in the power to think and to find out things and with less absorption of masses of knowledge is likely to give better results than are an overloaded curriculum and multiplicity of subjects."

A course in which common things are studied and a few problems appropriate to the time and place of teaching are worked out thoroughly is of infinitely greater value than one in which the attempt is made to satisfy any of the syllabuses laid down or the questions set by the singularly incompetent, commercially-minded examining bodies who are now engaged in hampering the efforts of teachers to do their duty.

There are certain matters of fundamental importance to be attended to.

In all cases the pupils must begin by understanding what they are doing—what they are seeking to find out: and this must be put down in black and white, in pencil or ink, on paper, before any attempt is made to carry out the experiment or observation. The Euclidian method is the one most to be avoided. There must be no heading underlined with red ink such as "To prove that black is white," but a simple statement of the problem which in no way anticipates the conclusions to be arrived at. In present-day teaching, the instruction how to make the experiment entirely covers up the underlying motive; the idea that any motive other than the order given by the teacher is at the bottom of his work never occurs to the student. Yet it is our

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function to train boys and girls to go about their work in life with definite motives in view—thoughtfully.

Each lesson must be driven home. To make my meaning clear, let me give an example. Boys from school, as a rule, can define the meaning of density with some approximation to the truth: they have usually a certain vague idea how the density of an object may be determined; but ask them to carry out a determination and they make a most horrible hash of the business. On inquiry, it is usually found that they have determined a density at most once or twice; they should have made dozens upon dozens of determinations, so that they may grasp the full meaning of the conception and its applications.

In further support of my contention, let me give another illustration from experience. The members of a large class all determine the density of sea water and find it to be about 1,025 grams per litre. Three or four months later an examination is held and they are asked, "What about is the density of sea water?" Very few can remember; the majority give values varying from 1·2 to 1·5. That they should have forgotten such a fact is of small importance; what is of most serious importance is that answers so detached and thoughtless could be given—that it should not occur to them to consider what the possibilities of swimming in water of such density would be—how, instead of keeping afloat with difficulty, they would be like so many corks in the water. It is uncommonly difficult, I know, to keep on your feet in Salt Lake in quite shallow water. We are often told that we should think Imperially—we may well paraphrase the advice and, applying it to our teaching, train our pupils to think round the subject of study, whatever it may be.

The teaching must be moral: discipline must be enforced. By this I mean that truthfulness in observation and argument must be insisted upon: that no effort must be spared to make boys and girls appreciate the value of neatness and of exact work; that thriftiness must be insisted upon and every kind of waste prevented.

Some degree of alertness and readiness to act must be developed. The lack of self-helpfulness in the average student at the present day is ghastly to witness—spoon-feeding at school, perpetual lesson-learning or lesson-neglecting, seem to destroy all initiatory power. But this again is a theme which must be reserved for discussion on another occasion.

Much of our difficulty in teaching arises from the use of the wretched subterfuges which pass as practical text-books. No self-respecting teacher will allow books to be used in the earlier stages of the work or at any stage until a knowledge of method is acquired. Our first object must be to train our pupils to get at facts, to observe, to interpret observations, to understand how facts are arrived at; only when this is done can they read with advantage. It is impossible to anticipate all the contingencies which can arise in practice, every one of which will be regarded as an opportunity by the true teacher; moreover, the motive for an experiment cannot be the same at all times and in all places. The mere presence of the book acts as a mental drag. I have urged before to-day that a book must be written in class; that the utmost care must be taken that notes are written out properly; that there must be no rough notes made at any time. The revision of notes, I know, is the heaviest and least interesting part of the teacher's work but it is little short of being the most important. Heads and all teachers must understand that time is required for it—that no other branch of the work done in a school affords the same opportunity of giving effective training in the use of the mother tongue. I am satisfied that the correlation of literary with practical teaching in schools is the one great need of our time; but probably it will be long ere the teachers of literary subjects will, of their own accord, consent to leave their chairs and set themselves to deal with practical lessons; their incompetence is so absolute at present: something must soon be done, however, to put an end to the present system by which subjects are taught in water-tight compartments, with a consequent waste of time. Many schools probably which are now understaffed because they are administered on the water-tight compartment system would be found to be well if not over-staffed if the teaching of the various subjects were correlated, and a vast amount of time would be saved. Prof. Perry has pointed out in his recent address to the Physical Society that "such a simple mathematical idea as that of a decimal cannot be given in elementary schools in less than five or six years, whereas one week of weighing and measuring would give young children familiarity and clear ideas about decimals." This advice should be dealt with from the Captain Cuttle point of view by all heads and by teachers generally.

In fine, higher ideals must be introduced into our school system. We teachers of science have a great opportunity of showing the way. Let us see to it that we lay *our* foundations well and truly and that we build thereon only with sound materials; jerry building *must* be given up; then, if inspectors or examiners complain of the rate at which the buildings rise—well, with clear conscience, we will tell them: "Go, hang!"

The Council School Hymn Book. (1) Words only. 152 pp. 6*d.* net. (2) Words and Tunes with Complete Accompaniment. 187 pp. 2*s.* 6*d.* net. (3) Words with the Melody only (Staff and Tonic Solfa Notations combined). 114 pp. 1*s.* net. (Novello.)—We have pleasure in commending these publications to the attention of all whom they may concern. The selection of hymns has been done in a liberal, comprehensive, and sensible spirit, and Messrs. Novello propose to issue this book anew, if required, with a special title-page and cover, and an appendix if necessary to meet the individual requirements of any county or school. We cannot speak too highly of the solid work done in harmonising the tunes for this edition. It is capital musicianship.

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THE PHONOGRAPH IN THE CLASS-ROOM.

By W. H. D. Rouse, Litt.D.
Headmaster of the Perse School, Cambridge.

A GOOD deal of nonsense has been written about the use of the phonograph or the gramophone in schools, and it may be worth while to consider the matter from the practical point of view. I speak of the phonograph, because it is that of which I have personal experience; but my remarks will apply equally to the gramophone, or to other mechanical means of reproducing the human voice. Whatever advantages one may or may not have over the other, the same principles apply to their use; and the phonograph has this advantage, that its method of recording is not a professional secret, but is well known, and is easy, so that teachers may at a small cost make their own experiments.

The subjects of the records must be chosen by those who have experience of class-teaching. It is useless to take a collection of those records which are sold to the public for their amusement. These may often have interest, and some of them may even be useful, in class-teaching; but that will be an accident. I have heard some very fine examples of declamation in Italian, which indeed show what the human voice can be made to do, and shame us by contrast; but these can only give hints; they cannot be reproduced by the pupil, nor can they be used to check his faulty pronunciation step by step. The same is true of the French declamations made after some prominent actor or actress. For anyone who has to declaim a given speech, it is most useful to hear how the same piece is declaimed on the stage, although of course he will not copy it slavishly; but in schools we generally do not want declamation, we want simple articulation and correct intonation.

The Phonograph in the Class-room.

These are the two points which must be kept in view: articulation and intonation. For the correct utterance of the sounds, records must be made which in themselves may be dull or not dull—a series of words, for example, containing some difficult vowel sound has to be repeated slowly and very distinctly. The teacher can stop his machine after each word or group of words, for the class to imitate them; the pupils may also be asked to speak the words into a machine, and the record thus produced may be reproduced side by side with the model. It will be much easier then for the pupil to realise wherein he falls short, for we do not hear ourselves speak as others hear us. Even more valuable, because less liable to blurring, is the reproduction of the intonation, the grouping of words in the phrase, the natural pauses, of a good speaker. As everyone knows who has learnt to speak in a foreign language, the intonation and phrasing are much more important than the sounds. The difficulty in understanding and making themselves understood, felt by those who have learnt French or German from books, is generally due to their uttering the words separately, not in groups, and with English intonation. Now these points are admirably reproduced in the phonograph, even where the separate words have not been clearly spoken, if this should so happen. The value of the phonograph does not depend only on the accuracy with which the sounds have been made, although it is greater when they have been well made.

For dictation, too, there must be records specially made for schools. Here the teacher may, if he wish, stop the machine for writing; or better, the record may allow for pauses, so calculated as to give time for writing but not time for idling. In this way, a good standard may be suggested for schools which have not the advantage of first-rate teachers. Then again, songs may be sung; and songs ought to form part of all modern language teaching. Lastly, the higher stages require typical dialogues, or longer speeches in natural tones, or passages of narrative and poetry read aloud or recited.

Such is the general plan of a series of school records; and, of course, the pieces chosen for the higher stages of the work should be of worth in themselves, and should form a series of typical styles. They should be printed also in booklets, which may be used in other ways if it be found useful to do so.

In most English schools, modern languages are badly taught, in many schools execrably taught. These records should not be expected to take the place of competent teachers—this they can never do—but they may help less competent teachers, and perhaps teach them also; while for those

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schools which have good teachers there is still a use for the records. For one thing, they save the teachers. Thus a piece of dictation may be given by anyone who can set the machine going, at a time when perhaps all the teachers are busy elsewhere; if the teacher's time-table is full, as it generally is under our wasteful system of management, a class may be instructed which otherwise would have to go without. Or, indeed, the teacher may use the machine himself, and so give himself the rest which he so sadly needs and so seldom gets. Moreover, there is a distinct advantage in the machine, that it is always the same; and if children are to be taught to utter sounds, they must be taught by frequent repetition of these sounds in exactly the same way. Turn on your phonograph once, or turn it on a hundred times, it repeats these sounds with admirable docility, and without showing any signs of irritable nerves. It is also true that by frequent hearing of sounds badly made, and by speaking English all day long, even the best experts may lose a little of their own delicacy and correctness, which they may refresh by hearing the unvarying sounds of the machine.

I think that there is also a special need for the help of the phonograph in classical teaching. At last there seems to be a widespread desire to reform the current pronunciation of Latin at least, and a strong desire, less widespread, for a similar reform in Greek. But the prejudices of the world are so strong, that objectors are satisfied when they have said that a reform is impossible. They generally add that any attempt to return to the ancient pronunciation would waste time and would result in ugly sounds. No time is wasted, as can be easily ascertained from those who have tried; and the pure vowel sounds of Latin and Greek are ugly to those only who think that the corrupt sounds of gabbled English are beautiful. The best way to convince objectors of the great superiority of a reformed pronunciation is to give specimens. Those again who wish to reform, but do not know exactly how—a class larger than might be supposed—would be grateful for the help of a record spoken by some competent person. In one respect, also, there is practically universal need for instruction: in the matter of quantity. Quantity has nothing to do with accent, or with stress, but depends on the time of the vowel sound; a long sound bearing the same relation to a short sound as a quaver to a semiquaver in music. It seems needless to say this, but it is not so; for the difference which we actually hear in England is not one of quantity at all—it is a difference of stress. Thus the average person, boy or master, who utters the word *agēbāmus*, for example, puts a strong stress on the *bā*, but pronounces all four vowels of the same length. And yet it is quite easy, with practice, to give quantity accurately; even the Greek tonic accent can be given without interfering with quantity, or suggesting length: although this is a more difficult matter. But it is impossible to make the average person, boy or man, understand what is meant by what I am saying, unless he hears the sounds made. He probably will not believe me, but it is true, as a phonograph record would convince him in five minutes. The importance of a correct pronunciation of quantity is great: it makes spelling easy, and decreases the number of metrical mistakes made by pupils. A series of classical records would therefore be as useful in their department as those of modern languages could be.

We are still in the stage of experiment, and perfection has not been reached yet; but a good deal has been done, and I am glad to be able to testify that we have found phonograph records practically useful. It is very necessary, however, that all such should be made by persons who are actually engaged in class-teaching, or are in close touch with schools.

ACCIDENTS IN CHEMICAL LABORATORIES.

By R. L. TAYLOR,
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PROBABLY most of the readers of THE SCHOOL WORLD have heard something of the sad fatality which occurred recently at the Technical School at Plymouth, whereby one of the pupils—a girl of about fifteen—lost her life. Except in the local newspapers, most of the accounts of the accident which have been published throughout the country have been somewhat meagre, and probably not many of the general public understand exactly how the accident occurred.

We gather, from the detailed account of the inquest which was published in one of the west-country newspapers, that a class of eight pupils (boys and girls) were practising the neutralising of alkalies by acids. They were shown by the teacher how to use a pipette, and they seem to have practised the use of one with water in the first place—although none of them appear ever to have used a pipette before that particular lesson. They were directed by the teacher to take some caustic soda solution, to dilute it with an equal bulk of water, and then to suck up a measured amount of the diluted liquid in a pipette, and to neutralise that measured amount with some acid from a burette. The teacher appears to have shown them how to do the whole experiment from beginning to end, and he also warned them that if they sucked up any of the solution into their mouths the consequences would be very disagreeable. But the unfortunate girl who fell a victim to the experiment did not follow out the instructions exactly. Another girl who worked with her stated that she tried to measure out a pipette full of the *strong* soda solution, intending to mix it with an equal bulk of water afterwards, and then to neutralise it with the acid. A boy who gave evidence also stated that he and his partner did exactly the same thing. By an accident, which everyone who has seen boys and girls using pipettes

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knows occurs very easily, the poor girl sucked some of the liquid into her mouth, and, no doubt inadvertently, but most unfortunately, swallowed a little of it. The teacher's attention was called to the occurrence, and he tried to persuade her to drink some dilute solution of citric acid, but she, evidently in pain, and much alarmed and frightened, could not be persuaded to do so until a considerable time had elapsed. She soon became very sick, and remained ill for some days. In a week or two she was much better, but three weeks after the accident her throat became very bad. She was taken to a nursing home, where she gradually became worse, suffering great pain, and finally she died about a month after the accident had occurred. The doctor in attendance, after a post-mortem examination, stated that death was due to septic infection, set up by disease of the œsophagus, which could only be attributed to the caustic soda.

The case has caused a considerable amount of excitement, especially in the immediate neighbourhood where the accident occurred. Strong remarks were made by some of the jurymen about allowing children in schools to perform experiments in which there is clearly a considerable amount of danger. Probably many teachers of chemistry have had similar remarks made to them (although not perhaps concerning this particular form of experiment), and therefore it may not be amiss to consider as calmly as possible, and without being influenced too much by the unfortunate calamity which has just occurred, the general subject of dangerous experiments in chemical laboratories.

First, with regard to this particular accident. There is no doubt that the consequences of the accident were greatly aggravated by the fact that the caustic soda was not, as directed by the teacher, diluted with water before being sucked up into the pipette—that, in fact, the pupils did not rigorously obey the instructions given. I have no doubt whatever, in my own mind, that, if all the cases of accidents which have ever occurred in school laboratories could be carefully investigated, failure to follow out strictly the instructions given would be found to be the explanation of the greater number of them. It is therefore of the utmost importance in all cases, and more especially when the pupils are very young, that, from the very beginning of their practical work, they should be trained and taught to follow, implicitly and without variation, the instructions given to them by the teacher. Disobedience to or wilful neglect of instructions ought to be considered as one of the most serious offences which a pupil in a chemical laboratory can commit. Regulations with regard to this point cannot be too stringent.

But while the particular accident to which we are at present referring was probably aggravated by the fact that the caustic soda was not, as directed by the teacher, diluted with water before being sucked up into the pipette, it must, I think, be admitted that serious consequences might have followed even had the pupils implicitly followed the instructions as to diluting the soda. No particulars are given as to the actual strength of the soda solution which was used, but, if the undiluted soda produced fatal effects when swallowed, it certainly would not have been rendered harmless by dilution with its own bulk of water. It is quite clear that, done in that way and by young boys and girls, the experiment itself is a dangerous one. I really think, in fact, that we ought to give up the use of pipettes, in the case of young pupils, for sucking up liquids which are in any way harmful. Every teacher who has allowed his pupils to use pipettes knows that it is quite a common thing to find that one or more of them have sucked a little of the liquid into their mouths. Of course one does not expect them to swallow it, but the unexpected evidently sometimes happens, and there are many liquids which, while merely unpleasant when taken into the mouth, are dangerous to swallow; and caustic soda is one of them. Safety-pipettes, with india-rubber balls at the top, were suggested at the inquest; but these would be very clumsy. I have sometimes used a couple of inches of india-rubber tube attached to the top of the pipette; this practically increases the length of it, and diminishes the danger of sucking the liquid up into the mouth, and it also makes the instrument easier to control by the user. But the safest thing would plainly be to leave off using pipettes for dangerous liquids. They might still be used, with water or other harmless liquids, for practice in measuring, but when measured quantities of acids or alkalies are required they might quite easily be taken from a burette.

There doubtless are many elements of danger in a chemical laboratory. For my own part I have always felt that there is a heavy responsibility upon any teacher who has charge of a class in one, and that is why I insist strongly upon the necessity of training the pupils to implicit obedience to the instructions which are given them. This matter is of sufficient importance when the classes are small, but with a large number in a class the difficulties are increased many-fold. Unfortunately it sometimes happens that teachers themselves are not fully alive to all the difficulties and dangers. It requires a long apprenticeship in a chemical laboratory to become familiar with the numberless details which help experiments to go smoothly, and can only be appreciated by actual practice in a laboratory.[1] In my opinion no teacher ought to be placed in responsible charge of a class of young pupils in a chemical laboratory who has not served for a considerable time as assistant in a laboratory to an experienced teacher. If this were the universal regulation we should not hear, for example, of a teacher in a laboratory with a stick of phosphorus in his bare hand, cutting off bits of it with a pair of scissors and

[1] In the remarks which I make here with reference to the proper training of teachers, it must be clearly understood that I am not suggesting that any blame whatever can be attached to the teacher of the class at the Plymouth Technical School. From the evidence at the inquest he had had long experience in teaching in a chemical laboratory, and, as I have tried to show, the danger lay in the nature of the experiment which the pupils were performing.

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handing them to his pupils. This incident I know has actually occurred. Miracles have not altogether ceased, and the teacher referred to is still living and unharmed.

One of the commonest accidents in a laboratory is due to the breaking of a piece of glass tubing while it is being pushed into a cork or an india-rubber stopper. I have seen some rather nasty cuts made in this way. I do not think that accidents of this kind will ever be entirely avoided. We can only exercise constant watchfulness and continually reiterate our warnings. When such an accident does occur, or with a cut of any kind, the very best way I have found of stopping the bleeding is to press against the wound, and to keep it so pressed for a considerable time, a moderately thick pad of blotting-paper or filter-paper. If the wound is on a finger the paper should be folded into several thicknesses and wrapped as tightly as possible round the finger.

The use of strong acids not unfrequently leads to slight accidents—especially to clothing—and it would be difficult to avoid such accidents altogether. I prefer as a rule not to allow young pupils free access to bottles of strong acids, but to deal out the acids in such quantities as may be required for any particular experiment.

Apart from general causes such as those enumerated above, there are really very few actual experiments usually performed in chemical laboratories which can be considered dangerous. Explosions, of course, sometimes occur during experiments with hydrogen, especially when applying a light to a jet of the gas. But here there are well-known precautions with which every teacher ought to be familiar, and which ought to be insisted upon as far as possible. In spite of all, however, there will be occasional explosions, but even then there need not be any great danger, unless a *flask* is used for preparing the gas. Hydrogen ought never to be prepared in flasks by young pupils. If an explosion *does* occur the flask is bound to burst, and the pieces of glass will fly about in all directions. A more suitable vessel is a twelve-ounce thick glass bottle of the kind known as a "Kali" bottle, narrow form, with a neck about 1¼ inches wide, fitted with a two-holed india-rubber stopper. I have used these bottles for many years, and I have never known one to burst. When an explosion does occur, the india-rubber stopper simply flies out and there is no particular harm done.

When acting upon water with metallic sodium unaccountable explosions sometimes occur. The method of doing this experiment, which is described as the "safest method" in the Board of Education's Syllabus (list of experiments suggested for Stage I.), is, in my experience, not a safe one. It is suggested there that the sodium be stuffed into a half-inch piece of narrow composition gas-pipe closed at one end by pinching, and that the tube thus charged be dropped into the water. This, I have found, does not avoid occasional explosions. I have for some years always allowed first-year chemistry pupils to do this experiment in the laboratory with certain precautions. They do not attempt to collect any gas, but merely see the action of the metal on the water and examine the water afterwards. The experiment is, I believe, perfectly safe provided that very small pieces of sodium are used, that the sodium is quite free from any of the crust which usually forms on it when it is kept, and that the pupils stand with their faces well away from the little basin in which the experiment is usually done.

An experiment which is often considered to be a dangerous one is the heating of oxalic acid with strong sulphuric acid in order to prepare carbonic oxide. The danger is that water may be sucked back into the strong hot sulphuric acid; but there is absolutely no risk of this if the precaution is taken of using plenty of oxalic acid. So long as there is undecomposed oxalic acid mixed with the sulphuric acid, there will be no sucking back of the water.

I am inclined to think that accidents are most frequent in the little private laboratories which boys start for themselves at home. There boys are entirely "on their own," and they very soon tire of merely repeating the experiments they have done in the school laboratories, and begin trying others on their own account, knowing nothing, and often not caring much, about any necessary precautions. I have known of several really serious accidents occurring in this way, and these have given parents and others a very exaggerated notion of the danger of a chemical laboratory, just as the occurrence in the laboratory at Plymouth has done.

After all there are accidents everywhere—in the playing-field and in the gymnasium—and I should contend strongly that, with experienced teachers in charge and stringent regulations as to obedience to instructions by the pupils, the liability to accident in a chemical laboratory is less than either in a playing-field or a gymnasium. There is no occasion, therefore, for any alarm. The lamentable occurrence at Plymouth has shown us that there is greater danger in one particular kind of experiment than we had imagined, and I therefore think that that particular kind of experiment should be dropped. But the very great majority of teachers are experienced in their work, and I am sure that they are also conscious of their responsibility, so that we may feel some amount of confidence that the liability to accidents in chemical laboratories will not become greater, but less.

Practical Object Lessons from the Plant World. By H. J. Barnell. 171 pp. (Pitman.) 3s.—One gathers from the preface that these "object" lessons are intended for administration to children in schools. If this is so, we are sorry for the children. The lessons are much too technical. Numerous experiments and Socratic questions are, indeed, proposed in the column headed "Method," but many of them strike us as impracticable. Nor is the information supplied in the column headed "Matter" always trustworthy. On the other hand, the diagrams—white on black—are in many cases distinctly good, and may give useful hints for blackboard sketches.

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GEORGE BUCHANAN AS AN EDUCATIONIST.

By William Murison, M.A.
Aberdeen Grammar School.

THE French humanist de Thou in his history quotes Pierre de Ronsard as declaring that, while usually no lapse of time could efface the schoolmaster's pedantry, four of his contemporaries had nothing pedagogic about them but the cap and gown—Adrian Turnébe, Antoine de Gouvéa, Antoine Muret, and George Buchanan. Humanists indeed agreed in considering Buchanan not only the most brilliant British scholar of the age, but also the chief man of letters in Europe. "Poeta sui saeculi facile princeps" was his usual designation; and Joseph Scaliger said that in Latin poetry Buchanan was first and the rest of Europe nowhere. Nor did his reputation rest on his poetry alone. His political opinions were famous and influential; his *De Jure Regni apud Scotos* was hailed as a masterpiece of ripe scholarship and wise thinking. The publication of his "History of Scotland" was an event in the European commonwealth of letters. Since the sixteenth century, various circumstances have obscured his fame. Yet one who recently passed judgment on his work—the late Sir Richard Jebb—called him a consummate writer of Latin. Here, however, we must confine ourselves to Buchanan's educational activities. His whole life he spent in education, as college lecturer, as tutor, as writer on grammar, as head of a college, as university organiser.

Born in 1506 in Stirlingshire, Buchanan, after a course of training in Scotland, proceeded, in 1520, to Paris, where he studied for two years. It was a crucial period in French history, and Buchanan began then to receive that bent which made him distinctively a humanist of the French type. Returning home partly because of bad health, he joined a military expedition which unsuccessfully besieged Wark Castle. The campaign injured his health, and he could not continue his university course till 1525. That spring he went to St. Andrews to study under John Major, the renowned scholastic logician. Graduating B.A., he returned to Paris, and in due time became M.A.

In 1529 he began his educational career as a regent in the College of Ste. Barbe. His daily life there receives illumination from one of his elegies. It contrasts the refreshing sleep of sailors and ploughmen with the scholar's night spent in study. Then, after an hour or two's sleep, the watchman wakens him at four, and at five the porter rings for lectures. Into the lecture-room stalks the regent, birch-rod in his right hand, Vergil in his left. Sitting down, he shouts himself hoarse to obtain silence, and then proceeds to explain and illustrate the author. Meanwhile, one pupil is snoring, another is wool-gathering, a third has been bribed to answer for an absent comrade. One is without boots, another has huge holes in his. One has toothache, another is writing home. The rod is used; loud cries and floods of tears make a miserable day. Sometimes "chronics" come in troops and listen with Phrygian stupidity. They complain that their beloved Alexander and Guido are despised. And ever behind the regent sits the grim spectre of poverty.

The names Alexander and Guido refer to controversies between the scholastics and the humanists. Alexander de Villa Dei was the author of the *Doctrinale Puerorum*, a popular mediæval grammar. With the schoolmen, grammar, instead of being a compendium of linguistic usage, had become a mass of logical subtleties, and even theological analogies. The three persons of the verb, for example, were supposed to typify the Trinity. Guido delle Colonne was the very untrustworthy historian of the Trojan War. In grammar and in historical criticism, Buchanan sided with the new men. This we gather also from his numerous epigrams. One of these is launched at his old teacher Major, whose eminence provoked the attacks of many humanists. Major wrote a book, and on the title-page called himself "Major in name only." Buchanan's epigram says that the book is full of fictions, but, just as the lying Cretans sometimes blundered into truth, so does Major on the title-page.

After three years at Ste. Barbe, Buchanan became tutor to the young Earl of Cassilis, then in France. In his teaching he used Linacre's Latin grammar, a Latin translation of which he afterwards published. In the preface he speaks of the obscurantist antagonism to reform in grammar teaching; any divergence from tradition was considered impious. As an appendix, Buchanan added the method of study planned by the Spaniard Vives for Mary Tudor. As Buchanan evidently employed this method, we may note some of its precepts.

Pronunciation, says Vives, should be, from the beginning, distinct and accurate; this is important for after-progress. Correct accenting should be learnt. Writing should be taught, that the master's instruction may be taken down and extracts made from books. "Copies" should consist of wise maxims. The pupil should learn something by heart every day; this sharpens the intellect and creates a ready memory. Drill carefully in moods and tenses, for the English idiom causes frequent blunders in Latin tenses. Use Linacre's grammar and Erasmus *De Constructione*. The latter's *Colloquia* should be used for conversation, which must be diligently practised. Let the pupil hear and imitate accurate speakers. Dialogues should be written by the pupil on familiar themes, as clothes, parts of a house, food, divisions of time, musical instruments, furniture. Teach the correct meanings of words. Give much practice in translating from English into Latin, choosing for this passages both grave and gay, such as contain matter useful for life, consolations in misfortune, wise and true opinions to expel false and foolish fancies. Stimulate by rewards, by rivalry, by praise. Sometimes urge one on by praising another. The authors read should not only im-

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part sound knowledge, but also teach how to live a good life. Vives recommends Cicero, Seneca, Plutarch (in Latin); Plato's *Dialogues*, especially those on government; Jerome's *Epistles*; some of Augustine's works; Erasmus's *Institutio Principis*, *Enchiridion*, and *Paraphrases*; More's *Utopia*; for history, Florus, Justinus, and Valerius Maximus; the New Testament; and the Christian poets, Prudentius, Sidonius, Paulinus, Arator, Prosper, Juvencus. These, he says, often rival the classical poets in elegance, and in other respects surpass them as much as the divine surpasses the human. Here we have a reference to an educational dispute. Some teachers, among them Colet, rejected the classical poets for their paganism; others, as Erasmus, rejected the Christian poets for their bad Latinity. Buchanan, as we see from his St. Andrews scheme, preferred the classical poets just as he imitated their epigrams, iambics, and elegies.

Another controversy, the Ciceronian, was agitating scholars. At the Renaissance, Cicero was very early and very widely adored. Some scholars, in writing Latin prose, admitted no phrase, word, or form unless found in Cicero. Buchanan was no Ciceronian; like Poliziano and Erasmus, he drew freely on the rich stores of the Latin tongue.

About 1535, Buchanan returned to Scotland, and became tutor to one of James V.'s sons. He wrote a lampoon on the Franciscans, not because he held Protestant views, but because clerical ignorance, sloth, and self-indulgence invited scholars to exercise their wit and Latinity. James incited him to further attacks on the Franciscans, who, in 1539, got Buchanan imprisoned. He escaped to England and thence to France.

For the next three years Buchanan lectured in the College of Guienne at Bordeaux. The lecturers were accustomed to write Latin dramas for their pupils to act, partly to perfect them in declamation, partly to counteract the love of the popular morality plays. Buchanan composed four, two original and two translated from Euripides. The latter were originally done when he was learning Greek, that he might get the meanings of words more exactly—a frequent device in the dearth of teachers of Greek outside Italy. Montaigne was a pupil at this college, and for a time boarded with Buchanan. Years after, he told Montaigne that he meant to write on the education of children, and to advocate what Montaigne's father had devised—an environment of Latin to the complete exclusion of the vernacular.

In 1547, Buchanan went to Portugal to help in establishing a college at Coimbra. The Jesuits, however, getting control of it, accused Buchanan of heresy, and imprisoned him in a monastery, to be instructed by the monks. Could the irony of fate go further? One of the shrewdest intellects and most erudite brains to be taught by men whom he describes as quite unversed in the truths of religion, though neither unkindly nor ill disposed! In Portugal, Buchanan began to turn the Psalms of David into Latin verse—mostly in Horatian metres, and largely in Horatian phraseology. This won him immense reputation, and kept his fame living for generations. Many humanists turned the Psalms into Latin verse; a critic of that age remarked that, while reverence characterised the German versions, and elegance the Italian, Buchanan surpassed them all in variety of thought and purity of style. His Psalms long continued a favourite school-book in Scotland. Sixty years ago they were still in use in the Aberdeen Grammar School.

After leaving Portugal, Buchanan was again a college lecturer in Paris, and for five years tutor to Maréchal de Brissac's son. Having joined the Reformers, he returned to Scotland in 1561.

Soon after, we find him reading Livy with Queen Mary and acting as Court poet. Like More and Erasmus, he believed in the higher education of women. It was indeed an age of learned women in England, Germany, and France. Buchanan addressed poems to several of these—to Queen Margaret of Navarre, to Queen Elizabeth, to Mary Queen of Scots, to Lady Cecil.

In 1566 he was appointed principal of St. Leonard's at St. Andrews, but before that he was on a commission to reorganise the three colleges there. Though his scheme came to nothing, the part dealing with instruction in humane letters gives his idea of a secondary school with a preparatory department. Instruction is exclusively in classics, for Buchanan had the humanist's scorn of vernaculars as lacking the qualities that made classics specially valuable for training and culture.

In the sixth or lowest class the pupils are to learn elementary grammar and read Terence. The regent shall dictate the Terence, word by word, and give the accent carefully. Then he must dictate the interpretation in Scots. The class shall be divided into decurios, in each of which a nomenclator shall be responsible for the correction of written work. If any blunder is left unmarked, the nomenclator as well as the writer shall be punished. The pupils shall do composition every day, and be "constrained to speak Latin." Note that Latin conversation was compulsory in the humanist schools. At Strasburg, for example, to speak in the vernacular was punishable by flogging. In classes four and five, Terence, Cicero's epistles, Ovid's epistles or elegies, Erasmus *De Constructione*, and more advanced composition are prescribed. The work of class three includes elementary Greek, Ovid, Cicero's epistles and easy speeches, composition, and Linacre's grammar. For classes one and two there are recommended Cicero's speeches and rhetorical works, Ovid, Vergil, Horace, Homer, or Hesiod, verse composition, and declamation. For three hours on Saturday these two classes are to dispute, one against the other, on themes chosen by themselves or by the regents of other classes. At the end of the year, in August, the two best students are to receive

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"caps," and holidays follow till the beginning of October.

From 1570, Buchanan was tutor to James VI., whom he endeavoured to make a sound classic and a good king. The details of his training are unknown, but we may conjecture that it was modelled on the St. Andrews scheme and on the method of Vives. From the latter Buchanan departed in one particular. Vives says nothing about punishment. If Mary Tudor committed a fault, one of her companions was to be praised, in Mary's hearing, for the corresponding good quality. That, however, was not manly enough for Buchanan, and James suffered punishment in his own person. The young Earl of Mar had a sparrow which James coveted. One day, in a struggle for the bird, it was killed, and Buchanan promptly boxed James's ears. Another day, James and Mar were playing so noisily that they disturbed their tutor, who at last threatened punishment. They had lately written a theme on the incident from which Angus was nicknamed "Bell-the-Cat," and James saucily inquired, "But who will bell the cat?" Thereupon Buchanan castigated him in time-honoured fashion. But to return. We know James's daily work at one period. Greek came first—the New Testament, Plutarch, and Isocrates. Breakfast was followed by Cicero and Livy or modern history. The afternoon's work comprised composition, and at times arithmetic or cosmography, or logic and rhetoric. Whatever the special method, James ascended the throne with more classical learning than any other modern king.

Buchanan, with his views of kingship as instituted for the benefit of the nation, wished James to aspire to be the father of his people and their exemplar in everything good. In dedicating to James the *De Jure Regni* and the drama *Baptistes*, he said the former would show the ideal Scottish king, and the latter, in which Herod typifies the wicked tyrant, would prove that if James turned despot the fault would be his own. But, alas! in 1584, only two years after Buchanan's death, the Scots Parliament condemned the *De Jure Regni*, and English history shows that the charms of divine right were too potent for James to resist.

Pope speaks of the "ruling passion strong in death," and an example of that might be found in Buchanan. Education was with him a lifelong passion; even in his last days, when he was confined to his room, it dominated his nature. Some visitors once found him teaching his body-servant, a young lad, to spell a, b, ab; e, b, eb; &c. One of them said, "I see, sir, you are not idle." "Better this," quoth he, "than stealing sheep, or sitting idle, which is as bad."

To Buchanan, then, the aim of education was not merely to teach grammar and a good Latin style, but also to unlock the treasures of knowledge contained in the classics, that the learner might win culture therefrom and be moulded in character so as to become a worthy citizen and a good man.

SPORTS WITHOUT PRIZES.

By Arthur Pickles, A.R.C.Sc.

THE annual athletic sports provide for nearly all schools the gala-day of the year—the day of all others which attracts the boys' friends to the school in full array. Prize-days have certain devotees; school entertainments may be patronised by a few, but it is on the sports day that the boys are encouraged and cheered by admiring relatives in greatest number. Proud mothers attend to see how Reggie and Archie look in their new running togs; fond sisters point out their brothers to friends; and fathers and elder brothers follow with grim interest the details of the race.

It is unfortunate, however, that this, the occasion which subjects the boy to more adulation than any other of the year, should be, as a rule, the one occasion on which he struggles for self rather than for the school, and for personal glorification almost to the exclusion of the finer feeling which nerves him in other school games—the desire to bring credit and honour to his form or house or school, irrespective of his personal success. In cricket, football, hockey, lacrosse, and every other corporate game, the boy's personality is merged in that of the team, and he knows no separate existence. Playing for his school eleven, he must not consider his own batting average if the success of the side demands that he should play a forcing and reckless game. Similarly with the games of hockey and football, it becomes a matter of indifference which member of the team scores the goals so long as they are scored; and to the end of winning, selfish play and selfish ambition must be entirely subordinated. It is a case of everything for the common weal, and nothing for self.

With athletic sports, as usually conducted, if we ignore the possible exception of the tug-of-war, there is nothing of this advantage which attends the corporate games—which, indeed, is one of the most important of the many influences which go to make games of such great value as educational influences. It corresponds to the lesson which every boy must learn in his larger life—namely, that he does not live to himself or for himself, but that he is part of the social body or organism, whose honour he should feel to be his honour, and whose disgrace is his disgrace. If, therefore, a corporate character can be given to athletic sports by any scheme, their value to the educationist is greatly enhanced.

Another feature peculiar to athletic sports is that success in them is rewarded by valuable prizes, which in schools usually take the form of silver cups—a form of prize undesirable in itself as being eminently suggestive of something quite opposed to training, and with which the athlete has no concern whatever. Apart from this, the fact that they are of considerable value may in itself lead to grave abuse. Finding that they are able to convert brawn and muscle into the equivalent of solid cash, many boys make almost

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a regular profession of "pot-hunting," thereby laying a foundation for the curse of professionalism in games, with all its accompaniments—sordidness, "transfers," jobbery, and gambling. A promising boy athlete is often taken up by trainers, who offer to keep him and "run" him directly he comes to the front in athletics. That sport is being degraded in England by professionalism is a truism, but that its roots are so widespread is not generally recognised. If our games are to be kept sweet and clean, something will have to be done to raise them above the mercenary rottenness on which they are being largely based.

The possibility of prize-hunting is afforded by the "strangers'" and "invitation" races—that is, races which are thrown open to the boys of other schools, and are largely in vogue. They furnish the temptation to go the rounds and accumulate biscuit-jars, fish-carvers, salad-bowls, and a multitude of other things in far greater profusion than the winner can ever use in his own home; expensive inutilities which only have significance in so far as they necessitate the raising of his insurance premium.

In view of these considerations, it is interesting to note how the Manchester Grammar School sports were completely reorganised recently, and the two principal ideals which guided their reconstruction, viz. :—

(1) To give a corporate character to them.

(2) To remove the element of personal gain.

The realisation of the first of these objects presents the greatest difficulty, especially in a day-school like the Manchester Grammar School. In the scheme adopted by the committee the whole school was split up into four divisions, each containing about 200 boys, who were, approximately, of the same age. Thus the first division contained the sixth, transitus, and fifth forms, and, as the classical, mathematical, and modern sections of these were all put in competition with each other, nine competing sets fell into the first division. The same held with the other three divisions. Challenge shields were offered for competition in each division—the shields to be hung for one year in the room of the form in each division that secured the highest number of marks, according to a predetermined scale. In the awarding of marks, a distinctive feature was that in some of the races marks were not only given for the first three places—that is, to the prize-winners—but also to all who reached a given limiting standard. In the half mile (open), for example, the marks given were: 1st, 19 marks; 2nd, 17 marks; 3rd, 15 marks; limit, 2min. 30sec., 4 marks. An inducement was thus held out to those boys who might not be able to secure a prize, but who were able to reach the limit, to enter in order to secure marks for their respective forms.

In this way the competitors in the sports were given something to strive for apart from their own renown—the honour of their form. But expensive prizes were not given to the winners of the races. Instead of such prizes, small bronze tokens, engraved with particulars and bearing the school badge, were offered to them as a memento of the occasion, and personal distinction was thus secured without any personal reward.

Incidentally, one outcome of this system is that handicaps cannot be given under it, and a fruitful source of difficulty and annoyance passes out of sight. "Invitation" and "strangers'" races find no place in this scheme; they are banned, and rightly so, for they only appeal to the mercenary side of the boy's nature, and are an incentive to the "pot-hunters," whom we are strongly desirous of eliminating.

What objections can be raised to the general adoption of some such scheme in our school sports? The only argument likely to be urged against it is that the scheme does not offer sufficient inducement to the boys to take that trouble in training for the sports which is necessary to success, and as a consequence it may be stated that sports could not be successfully organised with such a basis. If that were so, it would be infinitely better to have no sports, or inferior sports, than sports made successful by the value of their prizes. If a boy enters solely for the prizes, we can do without the boy; if not, we can do without the prizes; and upon this dilemma the whole case rests.

But is it a fact that sports are impaired when there are no prizes of monetary value offered for competition? The recent experience of the Manchester Grammar School does not suggest an affirmative answer to this question. More than double the number of entries were taken than had ever been recorded previously in the school, and heats had to be run off on five preceding days in order to weed out the competitors to a manageable number for the actual sports day. Further, the times for the races were better than in former years—a fact, however, upon which one cannot lay much stress with but one year's experience under the new arrangement, for the character of school athletics necessarily varies from year to year. But it remains that these sports were an unqualified and unprecedented success.

They stand as an experiment of great value, for they prove that our English sport need not depend upon the mercenary spirit for its continued and prosperous existence. The noblest deeds of English history are enshrined in relics which are commercially valueless. The Victoria Cross is manufactured for 3½d. The shot-torn flags which hang in our cathedrals and abbeys are valueless as a marketable commodity, but intrinsically they are priceless, for they commemorate the heroism and bravery displayed in many a stirring fight for our national existence. David had this essential difference between pecuniary and intrinsic worth in his mind when his followers fought their way to and from the well to bring him water. Overcome by their devotion, and knowing that the water had only been obtained at great sacrifice, he exclaimed: "This is not water; it is the blood of the men who went in jeopardy of their lives."

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The highest honour to the Greek athlete was the coveted laurel-wreath which faded almost as soon as won in the Olympian games, and it was a Persian—to the Greek a man of inferior race—who marvelled that the Greeks strove with so much toil and agony for such a tawdry prize. It is essentially the same to-day as with the Greeks. The English schoolboy is not sordid by nature, but he is too often spoiled by the allurements we have described. The school, as well as the boy, is better for this new scheme of sports—more *esprit de corps* and more of that "all-togetherness" accruing, which go so far to make schools permanently helpful and a lasting success.

CAMBRIDGE LOCAL EXAMINATIONS, 1905.

Hints for Teachers from the Examiners' Reports.

THE forty-eighth annual report of the Local Examinations and Lectures Syndicate of the University of Cambridge contains the general reports of the examiners in the different subjects of the examinations of December last. The following remarks, culled from the reports, are intended to indicate certain widespread failings of candidates, so that teachers may know in what directions special efforts should be made so that the standard of work this year may be raised. The order of treatment follows that of the report itself.

Compulsory Section.—Reporting on the work of preliminary candidates in *Arithmetic*, the examiners say that, at many centres, decimals seemed to be regarded, not as a simplification, but merely as an artificial complication introduced for the purpose of examination; the most absurd reductions to vulgar fractions were much too common. Simple questions on £ s. d. were repeatedly and uselessly reduced to farthings, with the consequent necessity of reduction back again. Another frequent source of error was the unnecessary reduction of shillings and pence to fractions of a £.

In the answers of 25 per cent. of the junior candidates to the elementary part of the *Arithmetic* paper, inaccuracy in such simple rules as addition and multiplication (addition of three simple numbers, and multiplication of a sum of money by ten), and the mistaken idea that approximation was to be applied to all questions, proved fruitful sources of error. Want of method was very frequent, making the work not only hard to follow, but in many cases impossible to follow. Cramped style (calculations done on a margin of the paper about an inch wide) spoilt much work that would otherwise have been good, with the result that in many cases the candidates were unable to pick out the correct answer, even when it had been obtained. In the harder part of the paper only one question was solved correctly by any large proportion of the junior candidates. The methods of solution were often unnecessarily long: this was most marked in the answers to a question on the cost of a hollow cubical box, where the complicated methods adopted for finding the amount of material in the box often led to errors which simpler methods would have avoided.

The failures in *Arithmetic* of senior candidates were generally due to inaccuracy, too often accompanied, if not caused, by slovenliness in the working. Many of the candidates did not know the number of square yards in an acre.

English Sections.—A majority of the preliminary candidates failed in the *English Grammar* paper to explain clearly the conjunctive force of a relative pronoun and could not give an example of an infinitive as the object of a sentence.

The examiner of the candidates in *Composition* says that more attention might with advantage have been given to punctuation. The use of "and" or "and so" to connect strings of short sentences was overdone by the weaker candidates.

In *English Grammar* a large number of junior candidates missed the distinction between a *noun* and a *thing*. The analysis was weak.

The answers of junior candidates to the paper on *Shakespeare's "Twelfth Night"* gave much evidence of the unintelligent study of notes. The girls, though they more frequently erred by misreading the questions and giving much uncalled-for information, on the whole knew the subject better than the boys. Indeed in some boys' centres it seemed as if the subject had not been seriously studied at all.

The composition, style, and arrangement of a large number of the papers of senior candidates were much below the proper standard, and seemed to show that the candidates had not had sufficient practice in writing clearly and correctly their own impressions of characters and incidents in a Shakespearean play. This general weakness in composition was further attested by the quality of the "simple prose" into which the candidates were asked to turn a particular passage. Answers which demanded some independent thought were disappointing.

Almost all the junior candidates in their answers on *Scott's "Ivanhoe"* thought that "the best drawn character" meant the most virtuous character, a mistake which led to numbers of moral instead of literary essays.

Many senior candidates in answering the paper on *Milton's "Samson Agonistes"* showed a misconception of what is meant by "paraphrasing"; some turned the passages into indirect speech, others were either too diffuse or too short. It was disappointing to find that a question on Milton's blank verse was attempted by very few, and generally with no success. The majority of the candidates appeared to have read the play without paying any attention to the most ordinary features of blank verse in general or of Milton's blank verse in particular.

Commenting on the answers to the *English Authors* paper the examiner remarks that a word must be said against the mere reproduction of

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dictated criticisms; there were some instances of this, but not many.

In the *English History* answers of senior candidates there was a want of clear apprehension of the meaning of certain common terms: *e.g.*, "Protestant" was often confounded with "Episcopalian." There was much confusion of thought on economic subjects.

A considerable number of the preliminary candidates showed a general want of precision in their *Geography* answers, particularly in fixing the positions of mountains, rivers, countries, and towns.

Serious ignorance of *physical geography* was shown by senior candidates, pointing in many cases to unsound methods of teaching, while evidence was not lacking of the use of inaccurate sources of information. The geography of England seemed to have been neglected. Greater practice in map-drawing would result in a saving of time; many papers were unfinished because time had been taken up in writing long descriptions, largely not to the point, which a sketch map would have rendered unnecessary.

CLASSICAL SECTION.—The failures in *Latin Accidence* were comparatively few among preliminary candidates, though the mistakes made were almost always the same, and were more numerous in the cases and genders of substantives than in the forms of verbs. Successful dealing with the piece of unprepared translation was rare: the failures seemed to arise less from ignorance of words than from inability to follow the construction of the simplest sentence. This was made still more apparent in the attempts at composition.

The weakest answers in *Latin Grammar* of junior candidates were, in general, those to the questions on the comparison of adjectives and the conjugation of verbs; but the parsing was on the whole excellent, and in many cases redeemed a paper otherwise weak. The explanation of particular syntactical uses was seldom accurate in all points; and the attempts to convert direct into indirect speech were especially weak.

MODERN LANGUAGES SECTION.—In the *French Grammar* paper of junior candidates the accidence was weak and inaccurate; and except at some centres it was clear that insufficient attention had been devoted to this part of the subject. The examiners are disposed to think that a good many of the candidates who had been taught on the oral method had not yet learnt the proper spelling of words they knew how to pronounce.

In *Spoken French* some of the senior candidates had very little power of conversing, and not a few marred what would otherwise have been a creditable performance by errors in accidence and elementary syntax. The majority of the exercises in dictation were satisfactory, but in many instances it appeared that insufficient attention had been paid to this part of the subject, as candidates who had made fair progress in other respects here showed a disregard of grammar and the sense of the passage.

The set books in *German* were often carelessly translated by the senior candidates, and it was clear that no great pains had been taken in their preparation. The composition was unsatisfactory. Many versions showed lamentable ignorance of the simple rules for the position of the verb in a German sentence, and elementary blunders in syntax abounded.

MATHEMATICAL SECTION.—Comparatively few of the preliminary candidates knew how to draw a perpendicular to a straight line from a point outside it, and many made mistakes in measuring an obtuse angle.

The theoretical work in *Geometry* of the boys was much below the standard of the preceding year. The newer proofs of the equality of the base angles of an isosceles triangle were written out well on the whole, though wrong constructions were often made; the old proof was given by a large number, in most instances correctly. The proofs of the congruence of two triangles having equal sides were often worthless. Few candidates gave satisfactory proofs of the propositions from the third book of Euclid, though many attempted them; many appeared to have been hurried on to the third book before they understood the earlier propositions of the first. The mistake of assuming the congruence of two triangles with two sides and an adjacent angle equal was again not uncommon, and, even when the triangle was right-angled, very few stated the fact as an essential part of the argument.

Few junior candidates made use of the simplest test for a parallelogram by measuring the angles. In the question involving the determination of two points as the intersection of two loci, a considerable number were familiar with the locus of a point equidistant from two given points, but not so many with the locus of a point equidistant from two given lines, while few were able to combine the two ideas.

Not more than 30 per cent. of the preliminary candidates offering *Algebra* appeared to know that the product $a \times 0 = 0$. Comparatively few of the candidates were able to deal properly with the simplification of fractions. Very few showed any knowledge of geometrical progressions, but the question on graphs was well answered by many of those who tried it; it is a matter for regret that so many schools seem entirely to ignore this branch of the subject.

NATURAL SCIENCES SECTION.—In the case of junior candidates taking the *Experimental Science* papers, the questions on density, parallel forces, and the inclined plane were not done well, and the answers to a question on the barometer were disappointing. In the practical work there were fewer good determinations of the density of a solution than might have been expected. Of the candidates who did the alternative experiment on the latent heat of steam, many were unable to deduce from their observations a value for the constant, while some contrived to get a nearly correct result by erroneous methods.

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The descriptive answers in *Chemistry* of junior candidates were very satisfactory, and showed that the teaching of this part of the subject had been careful and thorough; the questions bearing more on theoretical points were not so well answered. Apparatus and experiments were accurately described, but the interpretation of the experiments was not good, the meaning being too often altogether missed. The methods adopted in the calculations were very generally correct, but arithmetical inaccuracies of the most elementary kind were regrettably frequent. In the quantitative practical work the chief error was in not confirming, by two weighings at least, the increase and the decrease in weight of the substances heated. In the qualitative work there was insufficient evidence of confirmatory tests having been used.

A large proportion of the junior candidates taking *Heat* defined the coefficient of apparent expansion of a liquid as the expansion of one gram of the liquid, and this was often the case where a good description of the use of the weight thermometer was given. It was surprising to find how many candidates were of opinion that the common alcohol thermometer could be used to determine the temperature of steam.

Their work in *Sound and Light* was disappointing; it gave little indication of experimental study or of interest in the subject. The answers showed that elaborate apparatus had been described to the candidates, or that they had read of such in books, whilst simpler experiments had been neglected. Few of the candidates were familiar with the phenomenon of "beats," and fewer still described them as though they had heard them. Nearly all distinguished a real from a virtual image by stating that the first could be thrown on a screen. They ought to be taught that in many cases the illumination is insufficient for the real image to be seen on a screen. Many too had the idea that, when light is passed through a prism, no dispersion occurs until the light passes out of the prism into the air.

The description by junior candidates of botanical specimens was well done; but in a certain number of cases it was evident that candidates had devoted much time to learning by heart the details of an elaborate nomenclature and had neglected the exercise of that careful observation which is the foundation of a knowledge of *Botany*. It cannot be too strongly urged that a scientific term should not be introduced to a young student's notice till he has himself discovered the need for the term. Few candidates were able to make quite accurate drawings of germinating seedlings. The frequency with which candidates described a wrong experiment seemed to indicate that, though the experiment had impressed them, they were unable to connect it with the phenomena it purported to illustrate.

The physiological work of senior candidates suffered from lack of experimental training; it was clear that very few of the candidates had actually seen a water culture.

THE AGE OF TRANSITION.[1]

THESE books serve to show how the interest in English literature is growing in this country; the first also suggests a warning to temper zeal with discretion. We cannot commend Mr. Snell's style. It is jaunty, discursive, and allusive, when it should be direct and simple. There is no room for waste in short manuals of this kind, and it is distressing to find, almost at the beginning, so much misplaced jesting as we see in the remarks on Occleve (i. 18, 19), or the needless remarks on the word *Quair* (p. 63), which describe not only what it is, but what it is not. Dignity we look for in a history of English literature, enthusiasm we are glad to welcome, but we do not always feel in the humour for jokes, nor do we see what is gained by saying, in the account of Stow, that he does not come altogether in this period, but "there is left a goodly part of him sprawling over our frontier line" (ii. 143).

Against these obvious faults much good may be set. Mr. Snell has studied his subject for himself. He includes not only writers who may be found in every history, but others who are not, although important. Literary historians very commonly neglect our prose writers of the sixteenth and seventeenth centuries, with a few exceptions such as North and Berners. Mr. Snell has something to say of Coverdale, Cranmer, Foxe, the Chroniclers, Nash and his circle, and of the distinguished but forgotten band of Elizabethan prose translators, such as Fenton and Golding. We think he has not gone far enough in this field—a very important one for the history of English prose: thus we miss Tiptoft and Whittington, with other of the pioneers of English prose style. But it is something to have made a beginning. Mr. Snell has the merit of forming his own judgment on the authors and works he describes; and the books should prove very useful to teachers, although their style makes them less suitable for the more impressionable age of the pupils.

Mr. Wilson's essay, which gained the Harkness Prize in 1904, is a critical study of Lyly's place in literature. He has a good subject, and one of great importance, not only because of Lyly's association with Euphuism, but because Lyly as a novelist and dramatist has been underrated. Mr. Wilson has something new to say on Euphuism, which is remarkable after all that has been written on the subject. He draws attention to the influence of Spanish literature in the sixteenth century, and in particular at Oxford, where Lyly studied. He sees the Euphuistic style in Hakluyt, Gosson, and others of the Oxford circle, and he regards the creation of this style in England as due in no small degree to North and Berners. Guevara has hitherto been given credit for the fashion, but Mr. Wilson

[1] "The Age of Transition, 1400-1580." Vol. i. The Poets. vii.+226 pp. Vol. ii. The Dramatists and Prose Writers. xxix.+167 pp. By F. J. Snell. (Bell.) Each 3s. 6d. net.
"John Lyly." By T. D. Wilson. ix.+148 pp. (Cambridge University Press.)

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points out that "Berners was writing Euphuism in 1524, five years before Guevara published his book in Spain." Alliteration, which counts for so much in the English writers, is not found in Guevara; and that we know is peculiarly English, being the main mark of early English poetry. Mr. Wilson thus takes something from Lyly's fame, but he adds to it in other ways. He traces the importance of Lyly in the history of the novel, and gives him the credit of discovering a new audience in the "ladies and gentlewomen of England," who have been ever since the chief novel-reading public. It was a clever stroke to remove the scene of the novel from the realm of adventure to the lady's boudoir. He also does justice to Lyly as a writer of comedy; he is always skilful in telling his story, often graceful and natural in dialogue, and his comedies, although meant so often as a subtle flattery to the Queen, are enjoyable for their own sakes. Nor does Mr. Wilson omit to notice the author's charming lyrics, which are not yet forgotten. Construction was, however, Lyly's strong point in drama; his character-drawing is not so successful. This is an able and interesting essay, worthy of a place on the shelves of those who love our literature.

AN ELIZABETHAN SCHOOLMASTER, AND OTHER SUBJECTS.[1]

FOR the first time this Elizabethan MS. now sees the light of publicity, and naturally raises great expectations. It contains some letters in Latin from a son to a father; in English, *e.g.*, excuses to a friend for neglecting to write, to a schoolboy from his brother, to a father thanking him for money, testimony of character from neighbours to one F. B., recommendation of an Oxford man as a schoolmaster, letter to obtain books "as a recompense" for a loan of £7 made to Parson Anne's husband, and other letters. Then there are entries in the commonplace book as to the duties of bishops and deacons, excerpts from an historical dictionary, medical recipes, diet prescribed by Mr. Edwarde, Professor of Physic, Oxford. Then come proverbs and adagia, reminding the reader of the comparative nearness of the time of Erasmus, a statement of the degrees of consanguinity forbidden in marriage, list of dangerous days in all the year for anyone to fall sick upon, religious questions, application for a schoolmaster's licence from a bishop, excerpts from Susenbrotus, and so on. It is thus a medley of entries in an ordinary commonplace book, and much of the volume, small as it is, is not specially of interest as a contemporary document in the history of education, though indirectly a good deal of information may be gathered as to the general ideas interesting to a man of culture of the period.

Unfortunately, the exercises which are included in the MS. can scarcely be all described as specimens of school work. The most important performance is a theological exercise presented at Oxford in the Theological School by one Edward Ann(e) in 1578. The editor of the volume is inclined to think that his ancestor, John Conybeare, wrote this exercise for Edward Anne, who was probably his pupil. Then follow shorter theses, *e.g.*: (1) An sancti sint invocandi? (2) An sacerdos possit remittere peccata. (3) An liceat jurare: together with quatrains of Latin verses on those questions.

The distinctively school exercises seem to be as follows:—about five schoolboys' letters; the transcripts of adages; the excerpts from Susenbrotus; and certain rhetorical exercises, of course in Latin. These include the following subjects: (1) Quid est veritas? quid mendacium? (2) Felicitas activa praestantior est felicitate contemplativa. (3) Latin verses on Vivat Regina. (4) Latin quatrain: Discipulus orat ludendi veniam. (5) Quatrain on: Animi boni rari sunt. (6) An authoritas philosophorum sit veritati in rebus philosophicis anteferenda? (7) Nemo in hac vita felix. (8) An monarchia sit optimus reip. status? (9) An melius praesint suo freti consilio quam qui amicorum consiliis adjuti? (10) An omnia appetant bonum? (11) Discipulis. (12) Labor omnia vincit improbus. (13) In superbiam. (14) Non nobis solum nati sumus sed reip. et posteris.

The subjects thus given are interesting. Unfortunately, the editor does not give these rhetorical exercises in full. He omits the major part as "lacking in interest." Accordingly, the school-historian loses the very subject-matter that he would most wish to have in full. The account that is given of John Conybeare, naturally, is somewhat "thin," so that we see little of the school exercises and of the schoolmaster in that Elizabethan era, in which we should so greatly wish for a complete contemporaneous account of the country teacher of a grammar-school. To make up for this, an autobiography is given of Dr. W. D. Conybeare (Dean of Llandaff), 1787–1857, which has its interest. There is also the Conybeare pedigree, written by the Dean; and, in addition, six specimen facsimiles of the MS. It should be added that the book is carefully edited, and no pains have been spared on the introduction and in the accurate reproduction and annotation of the text.

[1] "Letters and Exercises of the Elizabethan Schoolmaster, John Conybeare, Schoolmaster at Molton, Devon, 1580, and at Swimbridge, 1599; with Notes and a Fragment of Autobiography." By the Very Rev. William Daniel Conybeare, Dean of Llandaff. The whole edited by F. C. Conybeare. 159 pp. (Frowde.) 10s. 6d. net.

The Voyage of Captain James. 118 pp. *A Sojourn at Lhassa.* 112 pp. *An Embassy to the Great Mogul.* 135 pp. *The Adventures of Montluc.* 117 pp. *The Siege of Jerusalem.* 132 pp. *Prescott's Conquest of Peru.* 128 pp. *De la Motte Foque's Sintram.* 140 pp. (Blackie.) 6*d.* each.—In these booklets Dr. Rouse continues his original plan of providing attractive reading-books from sources not customarily tapped in educational work. We wish him heartily the success he deserves, for in all the little volumes lying before us he has done his work brilliantly.

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NEW EDITIONS OF SOME GREEK AUTHORS.[1]

WE have before us two excellent books from the "College Series of Greek Authors" published by Messrs. Ginn. The first, "Selections from the Septuagint," embodies a new idea which is likely to be very useful. Every public schoolboy has to do his Greek Testament, and as a rule he has nothing to illustrate or to explain the peculiarities of the style in which the New Testament is written. In many respects the Septuagint differs from this, but it resembles it still more. The editors of the present book have prefixed a grammar of Septuagint Greek, filling seventy-five pages, in which illustrations are drawn from the Septuagint, the New Testament, and the classical language. It is thoroughly well done in all respects except one. All discussions of Hellenistic Greek ought to look forward as well as backward. It is very remarkable in how many points this language is illustrated by the language of the succeeding centuries, and by modern Greek itself. Unfortunately, scholars pay little or no attention to the modern Greek language, and in this respect a useful addition could be made to the grammar which might show at the same time the continuity of the language from Homer to the twentieth century. Prefixed to this book is a general introduction including a critical examination of the circumstances in which the Septuagint was made. The old familiar fables are shown to be false, and the work is seen to have been spread over a long space of time. The questions here discussed are intricate, and we confess that the authors are not always quite clear. The body of the book consists of a number of stories—Joseph, the Exodus, Balaam and Balak, Samson, David and Goliath, Elijah, and Sennacherib. Each of these is preceded by a special introduction which treats of its subject in a fresh and stimulating way. Thus the editors dwell on the literary quality of the story of Joseph. Again, the Exodus is illustrated by the accounts of Josephus and of Alexander Polyhistor, taken from Artapanus, and that of Manetho, with some other writers; and a few words of criticism are given on the credibility of the tale. In the story of Samson are seen the elements of the Greek tragedy; in the combat between David and Goliath, the spirit of Greek epic. Briefly, in each section some new and interesting points are singled out for discussion, and, all through, stress is laid on their literary side. The whole is provided with excellent notes, giving explanations, references, and illustrations, and the Hebrew is always kept in view. This book is a real success.

The "Selections from Lucian" does not, like the first, break new ground. There are other selections from Lucian in existence, but this, we think, is better done than its predecessors. The book contains "The Dream," "Charon," part of "The True History," "The Sale of Souls," "The Fisherman," a few dialogues, and the account of that extraordinary charlatan Peregrinus. Each piece has its own introduction, in which the editor discusses its place in literature, traces its descent, and gives literary parallels. These introductions show wide reading, and will direct the lover of good stories to many books which he will be called to know. We are particularly delighted with old Hans Sachs's *Schlaraffenland*. The idea of the ripe bumpkin dropping into a pair of ready-made boots is fine:—

> "So wachsen bawern auf den Bawmen,
> Gleich wie in unserm Land die Pflawmen,
> Wens zeitig sind so fallens ab
> Yeder in ein paar Stiefel rab."

In the general introduction the editor treats of the life and times of Lucian, and gives a brief account of his Greek style. It is rather unfortunate that the editor's own style, like that of others of our American cousins, is sometimes inclined to be florid. This book is also provided with good notes at the foot of the page.

[1] College Series of Greek Authors: "Selections from the Septuagint according to the Text of Swete." Edited by F. C. Conybeare and St. George Stock. vi. + 314 pp.—"Selections from Lucian." Edited by F. G. Atkinson. xlii. + 266 pp. (Ginn.) 6s. each.

BOOKS FOR THE DRAWING LESSON.[1]

"OF the various subjects taught in schools, probably none have undergone greater changes in the methods of teaching and in the character of the courses introduced than drawing."

If any justification be needed for the above statement, with which Mr. I. H. Morris prefaces his "Complete Drawing Course," it is to be found in the book itself. A comparison of the dog-eared drawing-cards which were passed round indiscriminately, lesson after lesson, in our elementary schools of five-and-twenty or thirty years ago, with the scheme of work so carefully drawn up and systematised by Mr. Morris, will show most convincingly that the changes have not only been great, but vastly for the better. His present volume, forming Part I. of "Longmans' Complete Drawing Course," is intended for children up to eight or nine years of age. It is well illustrated, attractive in style, and, in our opinion, should immediately find a place on the desk of every infant and junior school mistress. The course includes all the various phases of drawing taught in such schools, and, under the headings of free drawing (free-hand and free-arm), drawing in mass with chalk or crayon, brush drawing, ruler work, flat tinting, pattern-making, and memory work, the author has arranged a comprehensive series of examples, full of variety and interest. He has prefaced each series with a few

[1] "Longmans' Complete Drawing Course." Part I., for Infants and Juniors. By I. H. Morris. 22 pp. and 55 plates. (Longmans.) 5s.
"Blackboard and Free Arm Drawing." By Herbert H. Stephens. 127 pp. (Blackie.) 4s. 6d. net.
"A Drawing Scheme for Country Schools." By Albert E. D. Lowden. 52 pp. (Pitman.) 2s. 6d.
"Paper Sloyd for Primary Grades." By Ednah Anne Rich (with Introduction by Paul H. Hanus). 55 pp. (Ginn.) 3s. 6d.

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straightforward instructions as to treatment, and shows, by his hints and warnings, that he has had first-hand experience of the difficulties and pitfalls that beset the teacher of these subjects.

Mr. H. H. Stephens has issued his book with a laudable desire to stimulate the study and practice of blackboard drawing among teachers. He refers to the importance of the blackboard sketch as an aid to description, and to the interest shown by the scholars during the evolution of the sketch —an interest that has a high educational value, for the drawing and its associated facts are impressed upon the pupils' minds. Mr. Stephens gives a number of practical hints as to methods, and some sixty pages of illustrations dealing with simple models, common objects, animals, birds, fish, flowers, fruit, shipping, armour, and so forth, all of which are eminently suitable for blackboard treatment. They are well reproduced, and, though marred by occasional faulty drawing, are admirably arranged to form a systematic course of practice. At this stage, however, Mr. Stephens appears to have been carried away by his enthusiasm for his subject, and to have overlooked the fact that his medium has its limitations. White chalk on a blackboard, however admirable for diagrams and for objects represented by outline only, is perhaps hardly suitable for elaborate architectural detail, in perspective and light and shade, such as that involved in some of the later drawings. Assuming that the drawing is to be done *during* the lesson (as it invariably should be), we fear the time occupied would be considerable, and we can imagine a class growing restive during the process, however much of a lightning-sketch artist the teacher may be. If, however, the drawing is to be prepared beforehand, then it would be much more effective and artistically true if done, say, on smooth cartoon paper, with thick, soft charcoal, or lithographic chalk. The free-hand copy examples given are commonplace, and Mr. Stephens's suggestion that it is better to use too many than too few construction-lines is scarcely in sympathy with the trend of modern methods of teaching.

Mr. A. E. D. Lowden's book strikes us as being orthodox to the verge of dulness, and calculated to dispel most effectively any enthusiasm for art that may lurk in the breast of the teacher. Our sympathies go out at once to the poor youngsters of Standards III. and IV. who will be expected to wade through the mazes of perspective theory contained on Plates X. and XI.; whilst for the teacher to whom may fall the task of piloting them we have a feeling of profound pity, especially if, as Mr. Lowden assumes in his preface, he or she be possessed of "only slight ability for drawing." The advisability of allowing children of Standards I. and II. to use "tortillons" and stumping-chalk as a medium of expression is open to doubt; but that their initiation into the mysteries of this process should consist of a *minimum* of twenty minutes being spent in "stumping" a four-inch square, with the sole object of getting it *flat*, is surely a great mistake.

In "Paper Sloyd," Miss Rich has written a most interesting treatise on this valuable form of manual training, followed by diagrams of some seventy models, carefully dimensioned, and with explicit information as to materials, equipment, and construction. They are arranged to form courses for first, second, and third years' work. An important and welcome feature is the inclusion at the beginning of each course of photographs of the completed models, while at the end of the book are samples of papers suitable for making the models. It is a book which should be in the hands of every person interested in the education and welfare of our rising generation.

THE INSPECTION OF SECONDARY SCHOOLS.[1]

By the Rev. ARTHUR J. COOPER, LL.D., M.A., B.Sc.
Headmaster of Brewood School, Staffs.

THE very word "inspection" has a disquieting ring about it. We secondary-school masters, however much we may try to disguise the fact, do not like it. We may endeavour to persuade ourselves that we are ready to welcome it; we may even suppress our natural antipathy to it, but, notwithstanding, that antipathy is there, and deep rooted, too. Why? The answer is not far to seek. Because, as secondary-school boys—I use the term in its usual sense—we have been brought up under freedom. In our own school-life we have seen the varying influence of the individual master, differing in different forms, and have profited by it. We feel—in consequence of our past experience—that in the ultimate analysis inspection makes for a dead-level of mediocrity.

The ghosts of Arnold and of Thring, whose lives we have all pondered over (or ought to have done), rise up before us and ask, in unmistakable terms, whether inspection would have appealed to them. Could they have brooked interference with their ideals as they were working them out, and would such interference have proved beneficial to them? The answer comes, like an arrow speeding straight for its mark, to the hearts of each of us, that they could not. Yet they were schoolmasters, and such schoolmasters as most of us, even with our modern training, can never hope to be. They were born to rule, and their innate power asserted itself for the good of the nation in accordance with—as I believe—the will of God, and in such a way that they would have suffered persecution—and intense persecution, too—had they been subjected to the idiosyncrasies of inspectors.

But I am perhaps going too far. I must qualify. I should say the idiosyncrasies of inspectors such as we have had in the past, and to a less degree of those whom we have at present.

I thankfully acknowledge that the inspectors of to-day are more fitted for the work of inspection of a secondary school than those of fifteen or twenty years ago. Why? Because, and solely because, they are capable of taking a wider view of the situation. They are men of greater possibilities, but they have not yet learnt their business. I speak generally, and am cognisant that there are a few exceptions to the generalisation. I also speak sympathe-

[1] A paper read before the Association of Headmasters of Endowed Schools in the Midlands, March 3rd, 1906.

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tically. I feel that the present inspectors are doing their best, and that their efforts will be crowned with success. But it is most difficult to realise the right point of view which should be taken—the opposite is much easier—and the realisation can only be arrived at, as all truths are arrived at, by the experience gained from mistakes. True inspection involves the power to take a wide general view of the purpose of a school, and of the means used to effect that purpose. Time and experience alone can show how this estimate can best be made.

The inspectors of to-day are still specialists, but, instead of being specialists on the scientific side, they are specialists on the humanitarian. This fact—I speak as a man with some pretence to scientific training—gives us much to be thankful for. The reason is obvious. The present-day inspectors are potentially capable of being true inspectors of secondary schools, while the scientifically trained were not; although they were *par excellence* fitted for the supervision of our technical schools. Let me explain more fully. The scientifically trained inspector looked for science, and science only. He was too biassed in that direction. Well qualified, and even brilliant in his own department, he came upon the scene with the express purpose of pressing science to the front, even to the detriment of other departments of knowledge. Literature, either classical or modern, was of little moment. He was *impatient* of scientific training as the one salvation for our schools. I need only remind you of the old regulations for organised science schools to establish my point. But the present inspector, while for the nonce he rides the literary hobby-horse as hard as his predecessor did the scientific, recognises that, although his own side of the question is very dear to him, there *is* the other side. Although he has not yet arrived at the conclusion that school-life is *many-sided*, and that *all sides are necessary* for completeness, yet he is capable of seeing that such is the case.

The consequence is that, in the end, we shall get the balance adjusted and the secondary school made what it ought to be—the efficient training-ground of the future citizens of this world-wide Empire.

But I say "in the end." We have not at present arrived at that ideal. The inspectors have not arrived at that state of salvation.

I have heard from my colleagues in the scholastic world of a goodly number of reports on "full inspections," and I have carefully noted where the praise and the blame have rested.

But never once—and I say it with the deepest regret—have I heard of any *adequate* remarks touching the character-development which is taking place in the school reported on.

To me, this is vital. It is where the great distinction between the elementary and the secondary school lies. Character-formation must be pre-eminent in the secondary school, and all must minister to that end. The secondary-school master is the character physician.

Do not let me be misunderstood. Character-training is important, too, in the elementary school, but it is not so pressing. The pressing need there is the rudiments of education—reading, writing, and arithmetic. Character-development comes later, after the boys leave school. It depends largely upon the environment in which the child is placed after he has been removed from the elementary school, and it is incumbent upon those with whom he comes in contact at that period of his life to provide a healthy environment for him.

On making this statement to one who had been a master in an elementary school, and also, at the same time, an officer of the Church Lads' Brigade, I was pleased to find that my view was entirely borne out by his experience. He said he was astonished to find some of the most unpromising characters of the elementary school with which he was connected turn out well when brought under the influence of the Church Lads' Brigade. He further agreed that the difference of deportment was in the main due to the difference of age at which the influences were brought to bear on the individual. In the case of the elementary-school boy, the best years for *true* character-formation are spent away from school; not so with boys in the secondary school. Our upper boys are with us just when we can mould them for good or for ill. A boy's character cannot be formed by the time he is thirteen or fourteen, but if it is not formed when he is seventeen, eighteen, or nineteen (the age varies with the individual), then it will be through much tribulation—and unnecessary tribulation—that it will be formed afterwards.[1]

I do not say that it will not be formed after that time, but I do say that we can, if we will, save much suffering to our older pupils by our watchfulness while they are with us in our secondary schools.

I should like to dwell longer on this point, but I need hardly say that I am not writing an exhaustive paper. I have not tried to do so. I wish to evoke criticism and to call forth ideas which may help me (and I hope my fellow-headmasters) in points which have proved difficult. I am simply opening a discussion which I trust will be fertile of valuable suggestions for the guidance of each one of us in shaping the precious lives of those placed under our care. This being the case, I must pass on to consider what, from my point of view, is the function of an inspector of a secondary school.

First and foremost, his powers of interference with the curriculum should be—not barred, but certainly limited. He can decide whether a curriculum is generally too narrow or too wide, but it is open to criticism whether his interference should go beyond this. The headmaster who knows his district, who knows his boys, is the best judge of the rest. From the nature of the case the inspector cannot make himself acquainted with the needs of a particular school as efficiently as the headmaster can. He is not in touch with the powers that rule in the immediate vicinity or with the parents, while the headmaster, if he is fulfilling his duty, is.

Moreover, the inspector does not know the special needs of the individuals in the school which he is inspecting. He ought, therefore, to be very chary of blaming the headmaster—much less of penalising him by reducing his grant—when he allows a boy to drop a certain subject in order to take up for the time being some other which the headmaster feels convinced is of more benefit to him. But at present the attitude of the inspector is in a contrary direction. One's thoughts cannot but recur to the time when the Board of Education Bill of 1899 was under discussion. It was then generally believed—and not without reason—that the secondary-school system of this country was of such powerful and far-reaching influence that it was impossible for it to be transformed into something different against its will. But the secondary-school horizon has since that time so widened—chiefly by the growth of a new kind of secondary school—that the present system of inspection approaches perilously near to effecting the transformation which at that time appeared so undesirable, and

[1] This remark may need some qualification. The character is perhaps not formed completely in a lifetime, but the *character-bias* certainly is.

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which, to most of us, would even now be unwelcome, and would seriously modify the legitimate influence of our schools.

It may be that the inspector is not to blame, that the Treasury has laid down hard and fast rules which must be complied with if the grant is to be paid. If so—and I have a strong suspicion that this is the case—the rules should be made more elastic. It cannot be too strongly enforced that the headmaster must be paramount, and that if he is not to be relied upon he should be removed. This may involve hardship in specific cases, but it is absolutely necessary if our secondary schools are to carry out the function which must of necessity devolve upon them and if they are to do the work which the nation rightly looks to them to perform. The headmaster alone—or, in the case of large schools, the headmaster after consultation with his colleagues—should prescribe the curriculum for each boy, and—unless there are strong and manifest reasons to the contrary—the inspector should fall in with his ruling.

So far as I can see, it is only by such a system that the individuality and special characteristics of each school can be preserved. The conscientious headmaster may be trusted to prescribe what is best for his boys, and will be better able to decide in each particular case.

But the question arises: Does not this make the headmaster an inspector? My answer is that it does, and rightly so. As I have already said, the headmaster should be paramount in his school, and I add that he should be the *beneficent* inspector of his colleagues; while the Government inspector should more particularly be the inspector of the headmaster, who is presumed to shape the course taken by his staff. The inspector should be the guide, philosopher, and friend of the headmaster, and should bring the experience which he gains from visiting a multiplicity of schools to the help of each individual headmaster struggling for the light and striving to do what is best for his charges. He should focus the divergent rays of a multiplicity of experiences in such a way that they can be turned to account in schools of a very variable character, and so produce a distinct image of unity which can permeate all schools, even though they carry out—and efficiently carry out—very different objects. There is a unity which should permeate all schools, even though that unity is modified by the necessity for specific types in different localities. The object is the same throughout, but the means of attaining that object are of necessity different.

Just as the prudent headmaster should discuss school difficulties with his colleagues, so the inspector should discuss with *his* colleague, the headmaster, points which he thinks need remedying. But the inspector's suggestions should be treated as such, and not as final orders. From the point of view of the particular school, the inspector may be wrong and the headmaster right. This is more likely to be the case than the contrary. Hence the headmaster should—to quote a phrase which occurs in most schemes in a somewhat different connection—"be given full opportunity of expressing his views," and the inspector should be open to conviction.

Were this so, there would be far less discontent with the results of inspection than is at present the case. So far as I have been able to gather, the present tendency is for the inspector to usurp the function of the headmaster, and to do so contrary to the spirit of the regulations laid down by the Board of Education for the conduct of inspections of secondary schools. In Appendix A of those regulations I find the following statement:—

"The educational inspection will deal with all the subjects comprised in the curriculum of the school, but not by way of systematic examination, either written or oral."

These provisions define the functions of the inspector very clearly, and I have nothing to quarrel with in the province thus assigned to him. But do those who carry out the inspection adhere to these provisions? I think not. In all the inspections of which I have heard, I find that there is very definite—if not written—oral examination of the pupils. Nay, more, the inspectors feel aggrieved if the teaching has not been in accordance with certain curricula which have been issued under the title of "suggestions" for the teaching of certain subjects, which curricula bid fair, in the near future, to become definite codes on adherence to which the efficiency of a school is to be judged.

This means the surrender of the teacher's individuality—a vital point in secondary schools—and the reduction of all schools—I say it advisedly—to a dead-level of mediocrity.

Permit me, before going further, to crystallise from my point of view the functions of the inspector of a secondary school, not in any dogmatic spirit, but with the view of arriving at the true standpoint which headmasters feel the inspector should take in criticising their schools.

(1) He must realise that he is the equal and helpmate of the headmaster. He must not be a pedestal-loving official permeated with a desire for official red tape. If his position of necessity involves this, the conditions under which he works must be altered.

(2) He should point out to the headmaster the features of the school which in his opinion are open to criticism, but he should be prepared to listen to the views of the headmaster, and, unless strong reasons appear to the contrary, to fall in with those views. In other words, he must be sympathetic, and give the headmaster credit for doing his best in the conditions under which he works.

(3) He must grasp the complexity of the problem of secondary education, and must allow for the individual needs of each pupil as set forth by the headmaster. This involves absolute confidence and mutual trust between the two. The inspector cannot be cognisant of these needs, and he must therefore be prepared to come to the aid of him who can, for the inspector's true function is that of helpmate, and not of adverse critic.

(4) He must inspect, and not examine. Inspection and examination are two different things, and must be kept apart. The examination of the school by an examiner appointed by the governors, but otherwise unconnected with the school, must be consistently adhered to. Inspection touches upon matters which the examination cannot do, and *vice versâ*. Both are necessary. Neither alone is complete. They are complementary. Examination discovers the tangible results of the teaching upon individuals, while inspection should test the ethical results of the methods used—their bearing on character-formation.

(5) Above all, the inspector must note the tone of the school, and determine, as far as possible, whether it is efficiently carrying out its ideals. From its very nature it is impossible for examination to accomplish this, but well-directed inspection can.

You will gather two things from these remarks. First, that the inspector is unable to enter upon his work fully fledged. He has to be *made*. It would therefore be prudent for every newly-appointed inspector to serve an apprenticeship under an experienced colleague before embarking unaccompanied upon the complicated business of inspecting a secondary school. Only in this way can

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efficient inspection be assured and a continuity of policy arrived at.

Secondly, it follows from what I have said that the inspector must have wide discretionary power, and must not be bound down by hard and fast rules imposed upon him by his chiefs. Rules of this kind will hamper him in his desire to fall in with what appears to him reasonable when laid before him by the headmaster.

May I crave your indulgence for a few moments longer while I touch upon the question of inspectors' reports? At present, the Oxford and Cambridge Board, and, I believe, the Education Department also, make the stipulation that the report is not to be published except *in toto*. While recognising the danger of permitting the publication of isolated sentences, or even of short extracts apart from the context, I cannot but feel that some modification in this respect is desirable. It is conceivable that the report as a whole is a most favourable one, but that in matters of small detail, which are easily remedied or open to criticism, it is adverse. Such small matters do not affect the general tone of the report, and yet, in the eyes of the layman or the unsympathetic, they are liable to be greatly overrated.

What objection can there be to the issue of a concise report in a few lines as to general efficiency for the purpose of publication? The detailed report, which deals with internal organisation, as apart from tone and general efficiency, should be published *in extenso* or not at all, and it should remain with the governors—after consultation with the headmaster—to decide whether or not such publication should be resorted to. I see no objection to such a course, which is practically carried out by the inspectors of our elementary schools.

In conclusion, I would ask you kindly to overlook any weakness in this paper, and can assure those who have patiently listened to me that I shall feel more than satisfied if I have contributed, even in the slightest degree, to the solution of the difficult question of the inspection of secondary schools.

NEW SCIENCE ROOMS AT CHELTENHAM GRAMMAR SCHOOL.

Early in 1904 the Gloucestershire County Council, recognising the urgent need there was for better accommodation in Cheltenham for instruction in science and art, placed at the disposal of the governors of the Cheltenham Grammar School a capital sum of £20,000, to be used in erecting a new School of Art and School of Science and Technology. A piece of land contiguous to the Grammar School, and quite close to the Girls' School, was secured, and on this has been erected an edifice worthy of the high position that Cheltenham holds as an educational centre. The building is now ready for occupation. The frontage measures 123 feet; the side has a length of 120 feet. The School of Science occupies the ground floor, and the School of Art the first floor, the rooms being arranged in the form of a quadrangle, with open area for light and air in the middle, round which run the corridors.

The rooms will be used not only by the pupils of the Grammar School and of the County High School for Girls, but also by the students of the School of Science and Technology and of the School of Art. In designing the fittings for the School of Science, Mr. H. H. Robjohns (director of modern instruction) has made an attempt to cater for the needs of the different kinds of students who will work in them.

Three large rooms are apportioned to physics, the lecture theatre, 35ft. × 28ft., elementary laboratory, 35ft. × 28ft., advanced laboratory, 37ft. 2in. × 24ft., opening by glass doors into each other, as well as a dark room, 21ft. × 7ft., ingeniously contrived under the back of the chemistry lecture theatre.

In the physics lecture theatre, the lecture table (14ft. × 3ft.), besides being wired for low-tension current from accumulators and high-tension current from the electric lighting mains, and having the usual gas and water supply, mercury tray, suspension rail, &c., has an arrangement (3ft. × 2ft.) whereby apparatus for experiments in statical electricity may be kept hot for any length of time. The lecture-room rises in tiers, so arranged that every person has a view of the demonstration table, and is furnished with dual desks. At the back is a pedestal for an optical lantern, using electric light as illuminant. The wall at the back of the lecture table is furnished with a ground-glass blackboard running along its entire length. The windows of this room, and of the chemistry lecture theatre room, are fitted with dark blinds to enable the lantern to be used in the daytime.

The elementary physics laboratory, like the elementary chemistry laboratory, is planned so as to enable work to be carried on by a class of twenty-five. It has three long double working benches (12ft. × 5ft.) running across the room, with teacher's platform, demonstration table (9ft. × 2ft. 3in.), and blackboard at the side, commanding a view of all parts of the room. Two of these benches are provided with drawers and cupboards for the storage of apparatus, and one is fitted with suspension rail for experiments with pendulums, pulleys, &c. All have the usual gas fittings, but no water. Against the wall are three large sinks, two provided with draining boards. A suspension rail is attached to an end wall which is panelled with wood in order to allow drawing paper to be fastened to it. Between the windows are balance shelves, with cupboards underneath, while the room also contains an apparatus cupboard and shelves for chemicals. In this room, as in the advanced laboratory, and above the lecture table in the theatre, there are hooks fixed in the ceiling to enable experiments to be performed with pendulums of a good length.

The advanced physics laboratory is fitted for higher work in electricity, magnetism, heat, mechanics, &c. In the centre is a long slate slab (12ft. × 4ft.), resting on glazed brick piers built up from the concrete floor, for experiments with magnetic instruments. A slab (12ft. × 2ft. 9in.) similarly built up against the north wall forms the balance shelf. One corner is arranged with slate shelves and dark curtains for work with mirror galvanometers (Dr. Sumpner's pattern). There are two wood benches (12ft. × 5ft.) in the room, the one wired for electrolysis work, and fitted with suspension rail for work in mechanics, the other with trough and condenser taps for heat experiments. Both of these benches contain drawers and cupboards of varying sizes, so as to be capable of holding all sorts of apparatus. There are two sinks in the room, in addition to the water supply on one of the benches.

The dark room is provided with sink, cupboards, drawers, and shelves, &c., for photography, while a bench runs the full length of the room for optical work. It has a double door to give admission to the room without entrance of light, and is perfectly ventilated and heated. The controls for the electric light are so placed that there will be no groping for them in the dark.

The chemistry department similarly consists of three

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large rooms, the lecture theatre (40ft. × 35ft.), elementary laboratory (42ft. 10in. × 29ft.), and advanced laboratory (47ft. × 20ft. 8in.), with balance room (20ft. 8in. × 8ft.) between the elementary and advanced laboratories, and store room (13ft. 6in. × 9ft. 2in.) and preparation room (16ft. × 9ft. 2in.) between the elementary laboratory and lecture theatre. These rooms open into each other by glass doors, so that access is obtained from one to the next independent of the corridors.

The chemistry lecture theatre rises in tiers to the back in the same way as the physics theatre, and like it is furnished with dual desks.

The lecture table (14ft. × 3ft.) is fitted with the usual cupboards and drawers, with gas jets and condenser taps, both controlled from the front, and with a lead sink at one end and an earthenware sink at the other, both with water taps and covers. In the top is a mercury tray (2ft. × 1ft. 6in.). The table is fitted with two of Messrs. Brown's patent hoods for carrying away fumes, connected (as are all the fume closets, hoods, &c.) by flues to an electric exhauster situated in the store room, which discharges noxious gases up the chimney built for that purpose.

THE NEW CHEMICAL LABORATORY AT CHELTENHAM GRAMMAR SCHOOL.

At the back of the lecture table is a large sliding blackboard (12ft. × 6ft.), and a fume closet (opening also into the preparation room) with counterpoised doors of such a size (4ft. 6in. × 2ft. 9in.) as to enable large pieces of apparatus to be inserted easily, and provided with gas and water (with outside controls), and also with a small sink.

The preparation room contains a bench (9ft. × 2ft.) to take apparatus prepared for lectures, as well as a washing-up bench fitted with a large and deep sink (2ft. 8in. × 1ft. 9in. × 2ft. deep), with draining board, draining rack, and one of Fletcher's patent instantaneous water-heaters. The draining board folds over in an ingenious way, making a cover to the sink, and the bench is then transformed into an ordinary working bench.

The elementary chemistry laboratory takes a class of twenty-five, working at five single benches (18ft. × 2ft. 6in.), all facing the demonstration table at the end of the room. Each working place has a separate sink with swan-neck water tap on which is fitted a filtering ring. The sink cover when not in use is stored in one of the two cupboards which each working place contains, as well as two drawers. The gas jets have front controls. The cupboards run right under the sinks, for, as the benches are single, the drains, water and gas pipes, run at the back of the bench, access to them being easily obtained at any time by removing one or more of the sections of which the back is composed. The same arrangement, affording ready access to drains and pipes, is used in the case of the lecture tables.

The benches, being designed for elementary work only, have no shelves, and consequently the teacher from his platform has a view of all the students' work, as the students have of all that is being done on the demonstration table; a tiled strip affords place for one row of bottles standing on the top of the bench.

On one side of the teacher's platform stands an apparatus cupboard, flanked by a set of reagent shelves on the other. At the other end of the room, and adjacent to the advanced laboratory, are shelves for stock bottles of common reagents, and a set of steam ovens with still, whereby the waste steam, after heating the ovens, is condensed, to be used as distilled water. A stack of six fume cupboards (each 3ft. × 2ft. 3in.) runs along one side wall; these have tiled backs and white glazed earthenware bases; they are provided with water and waste (as well as gas, worked by outside controls), and can thus be kept thoroughly clean. Against this wall also, and enclosed in a fume closet, is a "hot plate" (4ft. × 2ft.) for evaporations, on which the dishes of a whole class can find a place, while, by an ingenious arrangement, any particular dish can be at once picked out from the rest. Between the windows on the opposite side of the room are balance shelves and cupboards, and in a convenient corner a large sink for washing up. In this room, as in all the science rooms, care has been taken to ensure that the position of the electric lights is such as to give the maximum amount of light on the work with the minimum amount of glare in the students' eyes; while waste of current is prevented by a plentiful supply of controls, thus enabling just those lights to be in use that are really wanted, and no other.

In the balance room is a cupboard for storage of reference books, expensive chemicals, &c.; the balances stand on slate slabs resting on white glazed bricks built up from the concrete floor.

The advanced chemistry laboratory will take eighteen students, working at three double benches (12ft. × 4ft. 9in.) placed across the room. As in the elementary laboratory, the gas jets are controlled from the front of the bench. Along the middle of each bench runs a set of skeleton shelves, affording ample room for reagent bottles; the top being flat and wide, affords a resting place for flasks, large bottles of standard solutions, &c. These benches, in

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common with all the working benches in the various rooms, are recessed at the bottom to prevent students' toes coming in contact with the panelling. Each working place contains two cupboards and two drawers, except the place in the middle, where the two single cupboards are replaced by a double cupboard with return shelves. Ample water supply is provided, with connections for condensers as well as jets for ordinary use; wastes for water from condensers also exist. The benches have electric light standards, and are wired for low-tension current for quantitative work in electrolysis. At the end remote from the balance room are the fume closets, three in number, the middle one 5ft. 6in. long and the side ones 3ft., all being 2ft. 6in. wide. The bases of these cupboards are of Yorkshire flag. One cupboard is provided with water and sink, all with gas; in each case the controls are outside the closets.

At the opposite end of the room is the blowpipe and combustion shelf, with hood above, connected with the fume extraction flues; near by is situated one of Brown's improved water suction and blast apparatus, delivering compressed air to the blowpipe and exhausting from a series of taps placed at convenient distances along a shelf, to which flasks can easily be attached for accelerating filtering operations.

Reagent shelves, apparatus cupboard, and glass tubing rack complete the equipment of this room.

A CONTRIBUTION TO THE GEOGRAPHY OF THE SPANISH ARMADA.[1]

THERE are points at which history and geography meet, and where history provides material that geography alone can weave into shape. In the case of the destruction of the Spanish Armada by Atlantic seas, chiefly on the west coast of Ireland, the event was of such supreme importance in itself, and occupies such a prominent place in history and in the imagination of the British people, that I may be pardoned if I assume that every detail that can be found out as to the wrecks of the ships is worthy of record. Since the State papers of England, Ireland, Spain, Venice, and the Papal States of the period of Queen Elizabeth have been published, it has been found possible to get at the very sources of the history of the enterprises and intrigues of that brilliant time.

In 1890 and 1891 it became my duty to make a special Fishery Survey of the west coast of Ireland. I had to navigate all harbours, channels, and creeks on that coast, and while primarily interested in the present condition of the inhabitants, the traditions of the past that still linger aroused my interest in the history of the places we frequented, and to which I have many times returned in succeeding years.

There proved to be many interesting events associated with those wild western bays, but none probably of so much general interest as the wrecks of the Armada. Twenty-three ships are known to have been wrecked on the Irish coast, while others reached safe anchorages on that coast, and were among those that ultimately returned to Spain

Before taking up the story of these wrecks, we must consider what previous knowledge the Spaniards had of navigation on the Irish coast. Spanish intercourse with Ireland, of which so many traces still remain, went on for centuries prior to the days of Elizabeth, and, in the years immediately before the sailing of the Armada, the Spaniards on the Irish coast were not only represented by the crews of the six hundred Spanish fishing boats, of which Sir Humphrey Gilbert made a special report to the Queen, but also in permanent fishing establishments on the coast.

Sir Francis Drake drew up a complete scheme for capturing these trading ships and fishing boats, and he states that the fishing vessels were each of about 100 tons burthen. Owing to the prevailing south-westerly and north-westerly winds, the run to and fro between Spain and the west of Ireland was a comparatively easy voyage for vessels that could wait a little for a fair wind. And the west of Ireland then seemed to be for fishing what the banks of Newfoundland have since become.

When the sun set on Friday, August 3rd (old style), 1588, the Duke of Medina-Sidonia saw the last of the British fleet. They had escorted him until they were abreast of the Firth of Forth, to make sure that he did not attempt a landing in Scotland.

As the fleet passed the Orkneys we may take stock of the number of ships composing it. This has been variously stated as 80 or 90. Both these figures are, I expect, under the mark. The Armada had left Spain 130 strong, but I think Prof. Laughton's statement may be accepted that the number of vessels of all sorts, including despatch boats and zabras, that actually entered the English Channel was no more than 120, of which seven large ships, the *San Salvador*, *Rosario*, *Santa Anna*, *San Lorenzo*, *Maria Juan*, *San Filipe*, and *San Mateo*, were lost during the days of fighting. The *San Juan de Sicilia* went down in the North Sea. The *Gran Grifon*, after taking on board a portion of the crew of the *Barque of Hamburg*, which went down in the Atlantic, put back and was lost on Fair Isle. The *Falco Blanco* (mayor) was captured when trying to get back through the Channel. The balance of those missing was mostly made up of small craft, one of which at least is known to have gone off to communicate with the Duke of Parma, and did not return.

Taking the number of ships that passed the Orkneys as 90, and allowing that 57 of them got back to Spain, which I think is nearly correct, the result may be stated as follows:—2 ships lost on Scottish coast, the *Florencia*, in Sound of Mull (wreck now being explored), and a vessel called the *San Juan*, on the outer Hebrides; 24 lost on coast of Ireland; 2 blown by storm into the English Channel; 57 returned to Spain; 5 unaccounted for. Result, 90.

Of the five unaccounted for, some were probably lost on the out isles of Scotland and of Ireland, while others may have gone down at sea.

Of the ships that passed westwards into the Atlantic, there was the Capitaña General, *San Martin*, with the Duke of Medina-Sidonia on board; and the *San Juan*, on which went Martinez de Recalde, the Admiral of the Armada.

The Levantine squadron was represented by the *Regazzona*, a ship of 1,200 tons, and the largest in the fleet; and by others, including *La Trinidad Valencera* and *La Rata Encoronada*. The last ship, specially well-found, was commanded by Don Alonso de Leyva, and with him were many of the noble youths who had come to be present at the invasion of England. On this ship great state was observed, and on the way to the Channel banquets had been given at which the duke and other high officers of the fleet were present. The *Rata*, too, was one of the hardest of fighters, and was in the thick of every engage-

[1] Abridged from a paper on "The Wrecks of the Spanish Armada on the Coast of Ireland," read before the Royal Geographical Society on February 12, by the Rev. Wm. Spotswood Green, M.A., Chief Inspector of Irish Fisheries.

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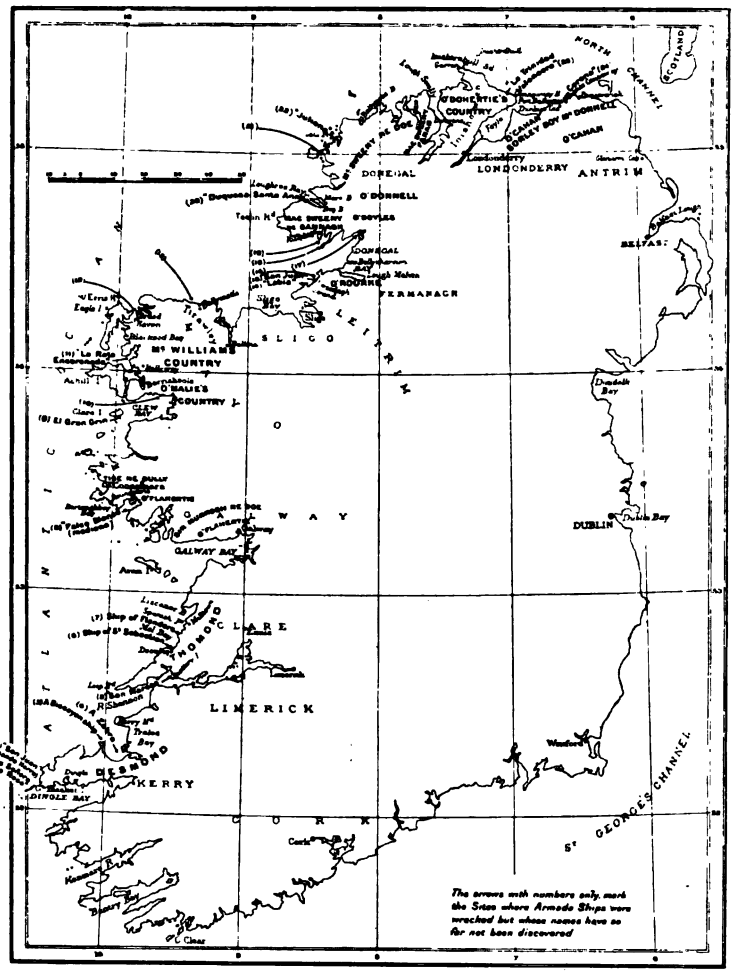
ment; while her commander, in the opinion of many, should have been the leader of the Armada.

Of the galleasses, the ships with oars worked by hundreds of slaves, only two were present, the *Gerona* and the *Zuñiga*. The remainder of the fleet was made up of galleons, transports, and the smaller craft known as pataches and zabras.

All the ships were now short of water and provisions, though some were better off than others. Numbers of men were sick, and the small relief that was gained at Scalloway, and from the fishing boats captured, did little to alter the deplorable state of the crews.

With the wind north-east, they passed the Orkneys on the 9th and 10th, and, according to the log of the *Zuñiga*, she and some of the others, including the *San Martin*, ran 400 miles in three days, and sighted the north of Ireland; but then the wind went to the south, and drove the whole fleet northwards. On August 23rd and 24th there was a great storm, which scattered the ships, and on August 26th some found themselves in 63° N. lat.

When the Armada had worked back to lat. 58° N., off Rockall, a momentous conference took place on board the *San Martin* as to whether it would be better, on account of the famishing state of the crews, to make for the Irish coast, or to follow the safer course into the Atlantic. Calderon reports that, while Diego Flores advocated the former course, the duke was led to decide to keep to the westward. Recalde, however, with twenty-seven ships, had already separated from the duke; in desperate straits for fresh water, and with the crews dying by scores, he arrived at the fateful decision of making for the Irish coast.



Besides those ships that at first accompanied Recalde, others that had suffered special damage in the fighting, and were to leeward, joined him later on, all hoping to reach port, obtain water, and do some repairs. The ships that had followed Recalde were again scattered in a south-westerly gale on September 2nd, and, according to their position to windward, they all dropped in upon the Irish coast at different points about the same time, between September 1st and 5th.

We must imagine this group of vessels approaching the Irish coast from the north-north-west, and forced inshore. Those most to windward would reach Kerry, others Clare, Galway, or Mayo; while the leeward ships, failing to weather the north-west corner of Mayo, would fall away into Donegal Bay. In this order they arrived.

Some ships that sighted Ireland at this time tacked to north-west and gained an offing before the wind veered, and thus escaped; among these was Calderon's hulk *San Salvador*.

Martinez de Recalde could not personally take much part in the direction of affairs, for he was very ill; according to the evidence of one of the prisoners examined at Dingle, he took to his bed after the battle of Gravelines, and never left it until three days before reaching the coast of Kerry. Experienced old sailor that he was, he no doubt pulled himself together when the landfall had to be made, and thus brought his ship, with two despatch vessels, on September 5th, safely to anchor under the lee of the Great Blasket Island. Another large ship, which had sighted the Blaskets on September 1st, and had been standing off and on, met him at sea and followed him in in safety. This ship was the vice-flagship of the Castilian squadron, and must have been the *San Juan Bautista*. During the gale of the 11th, the *Nuestra Señora de la Rosa*, in attempting to enter, struck a rock, but ran on, firing guns for help. She anchored near to Recalde, but suddenly went down. Following the *N. S. de la Rosa* came the *San Juan* of Ragusa, her mainmast gone and her sails in tatters. She also anchored near to Recalde and sank, but not before the crew and some pieces of artillery were saved. Recalde, in the *San Juan*, and the surviving ships with him, remained in the Blasket sound for thirteen days, and then passed on to Spain.

On or about the day that Recalde entered the Blasket sound, four large ships and three despatch boats entered the Shannon, and, sailing up, anchored safely in Scattery Roads. While there the Spaniards burnt the *St. Marcos*, a great galleon that had suffered much in the fighting, and was no longer seaworthy. The remaining ships left the Shannon on the 11th, the wind then being north-east, and possibly were among those that got back to Spain.

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A great number, probably twenty ships, of the Armada were sighted off the Clare coast: four anchored in the open sea off Loop Head; two of these were probably those wrecked in Mal Bay, while the others, as well as two ships which were seen at anchor for three days outside Arran Islands, may have left the coast in safety.

The *Falco Blanco* (midiano) was lost somewhere about Roundstone, in Connemara—that is, in Tige ne Boulie O'Flahertie's country. Unlike Clare, this country was practically outside English control, and the survivors of this wreck, including Don Luis de Cordova, were at first cared for by the O'Flaherties, who, sailors themselves and knowing something of the outside world, were inclined to protect the survivors. Threats, however, induced them to deliver up the prisoners, and, with the exception of Don Luis, a few officers, and two others, who were hidden away by the townspeople, they were all beheaded or hanged in Galway.

Passing north of Galway to Clew Bay and Mayo, we meet with definite information of the loss of the great ship *El Gran Grin*, with Don Pedro de Mendoza on board; striking the rocks of Clare Island, she went down. For some days those who had escaped safe to land, numbering one hundred, hoping that their lives at least would be spared, and hearing that other Spaniards had landed to the northward, asked that they might be sent in boats to the mainland; but Dowdarra O'Mailie, who was chief of the island, and wished to stand well with the English, put them all, including Don Pedro, to the sword.

One of the most interesting places in connection with the Armada is Blacksod Bay. In the Irish State Papers we find that a great ship came into the bay on September 6th or 7th, and anchored in the middle of the bay between Torane and Ballycroy. This ship was no other than *La Rata Encoronada*, with Don Alonso de Leyva and his young nobles on board.

Mr. Froude gives a faithful account of the wreck of this ship, but he gets into confusion as to the subsequent events. Soon after the *Rata* anchored off Ballycroy, which was an exposed anchorage, another great ship, the *Duquesa Santa Anna*, sailed in, and, going up the bay, was reported to be at "Pollilly, off Torane." This is the best anchorage in Blacksod, and would nowadays be described as "Elly Bay, off Tirawn." The *Rata* dragged her anchor, and was seen stranded on September 11th. De Leyva and his company landed and proceeded to fortify themselves in an old castle close by. Landing all the treasures that they could save, and their armour, they burnt the wreck. The old ruined castle of Doona marks the site with accuracy.

De Leyva did not stop at Doona, but crossed the bay with his company, and, joining the people of the *Santa Anna*, they proceeded to fortify themselves at the ruined castle of Tirawn, but subsequently went on board again and put to sea.

These events being more connected with history than geography, I must thus dismiss them and follow the fortunes of the *Santa Anna*, as I think I have found the exact site of her destruction. Failing to get towards Spain, owing to the wind on the 15th having backed to the southward for another cyclone, she kept away northward for Scotland, but is reported to have been wrecked in Loughros More Bay, in Donegal. De Leyva and the two ships' companies, making about 800 all told, entrenched themselves on shore close to the wreck for nine days, and then made their way overland to Killybegs. Finding there the galleass *Gerona* in a very battered state, they repaired her, mending her rudder that was broken; and on October 16th put to sea for Scotland with 1,300 men on board. She rounded Ireland's north point in safety, but, her rudder giving way, she was driven at midnight on to the "Rock of Bunbois," near the Giant's Causeway, and all perished except five sailors and soldiers, who managed to reach the shore, and were kindly treated by the McDonnels in Dunluce Castle.

The site of the great catastrophe that closed the careers of Don Alonso de Leyva and his gallant company is of particular interest. Tradition connects the wreck of the *Gerona* with the little bay called Port na Spagna to the eastward of the Giant's Causeway, but those who reported from personal knowledge said she was wrecked on the "Rock of Bunbois," that is, in English, the rock of *Bush Foot*, which is a little to the westward of the Causeway; and the Lord Deputy reported, December 31st, "that three fair pieces of brass lie among the rocks of Bunboyes, where Don Alonso was drowned, and can be recovered." Taking all things into account, I incline to the conclusion that the remains of the *Gerona* lie off the Bush River near Port Ballintree.

Failure to weather Eagle Island threw no less than nine ships, including a large ship lost in Broadhaven, in the direction of Donegal Bay, and they were hopelessly embayed. Passing the ship wrecked at Inver, one was lost on the coast of Tirawley, possibly in Ballycastle or Lackan Bay; and the survivors from this wreck, including some ecclesiastics and other persons of note, were captured by William Bourke, of Ardnaree, near Ballina, and by him were handed over to George Bingham, brother of the Governor of Connaught, who executed them.

Farther east, three great ships, including the *San Juan* of the squadron of Castille, driven further to leeward, and, as they said, "failing to weather Cape Clear" (in this case it was Eagle Island), anchored off Streedagh Strand, between Sligo and Ballyshannon.

History in this case, as contained in Captain Cueller's letter, first published by Captain Duro, and of which several translations have been made, furnishes ample material for discussing questions of topography. The ship of the Levant Squadron, probably the *Labia*, in which Captain Cueller then was, and her two companions, were driven ashore and wrecked, with the loss by drowning, or massacre when they reached the shore, of more than 1,200 men. Considering the direction of the wind and other circumstances, the smooth strand to the eastward of Milkhaven was, I believe, the exact spot where Cueller was washed ashore.

The Lord-Deputy Fitzwilliam visited these strands after the wrecks. Fenton had previously reported 1,200 dead and great masses of wreckage. The bodies were, no doubt, by nature or by human agency, buried in the sandhills, and nowadays, when storms shift the dunes, quantities of human bones are brought to light. This is well known to the local inhabitants.

Mr. Allingham, of Ballyshannon, has done much to elucidate Captain Cueller's wanderings around the mountains, and to McClancey's castle on Lough Melvin, and I am satisfied that, with his aid, I have followed Cueller's track until, nine months after the wreck, he was ferried probably from Dunseverick, in Antrim, to Scotland.

On September 5th, three ships were seen from the Sligo coast making for Killybegs. One of these, the galleass *Gerona*, already referred to, got safely in, one was lost a little outside the entrance, the third appears to have run ashore in the harbour, and, breaking up, the wreckage was used by De Leyva and his people in repairing the *Gerona*. When De Leyva therefore reached Killybegs, he found more than 1,500 Spaniards in McSweeney ne Bannagh's

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country before him, but when pressed to assist the chieftains of these parts in making war on the English, he replied that the levying of war in Ireland was not included in the instructions he had received from King Philip.

The last ship that was certainly lost in Ireland was *La Trinidad Valencera*, a great Venetian ship of 1,100 tons, with Don Alonso de Luzon, Ponce de Leon, and other renowned officers on board. In the gale of the 2nd she had sprung a leak that could not be kept under, and, sailing in through Inishtrahull Sound, ran up along the coast of Inishowen, and anchored in Glenagivney Bay (called Kinegoe Bay on the charts). It took two days to land her crew and some men from the *Bark of Hamburg* that were on board, numbering in all 600 men.

When the *Valencera* sank and became a wreck, Don Alonso and his company marched eighteen miles inland to Illagh (or Aillagh), O'Dohertie's town, where they surrendered to the English, after many had been shot down. The ruined castle of Ellagh, close by, on the north side of the railway between Derry and Buncrana, still marks the site of this surrender.

During the whole time that the Armada was beating the terrible retreat, the weather was exceptionally stormy; there were a succession of cyclones, those of August 23rd to 24th, September 2nd and 10th, being the most destructive. The wind was oftener southerly than in any other point. It varied chiefly from south to south-west, and in spite of this some of the ships made their way to windward, or at least were able to maintain a south-south-easterly course, which proves that they were able to sail successfully within six or seven points of the wind. Others probably had no weatherly qualities at all, and only made way when they got the wind abaft the beam.

HISTORY AND CURRENT EVENTS.

WHEN, during the course of the war in South Africa, we were sometimes asked for our opinion on the matter, it was our habit to say we would wait for thirty years before we would give an answer. Such is the advantage of watching events instead of having to decide on action one way or other. The news, as it arrives from the Transvaal, is ratifying our caution. The war did no more than many wars have done in history. It gave a negative answer to one proposed solution. The Boers were not to have their way by military force. So, Cromwell decided, in sequence, that the old kingship, that Ireland, that Scotland was not to have the last voice in English politics. But the Restoration of 1660 found all the problems still unsolved. How many of them have been finally solved since, who can say? Now that, in South Africa, the sword has put aside one solution, what is the settlement to be? Is one race to prevail against the other? Are they to coalesce? What will be the relations between the various States of South Africa? what between them, either divided or federated, and the mother country? Such is the history now being made there! To those of us who watch, it is interesting academically. To those who have to act, wisdom is necessary. Whence shall our statesmen get it?

THE Home Secretary was asked a question the other day about "passive resisters." In reply he said, "I have no power to intervene in the proceedings for the enforcement of the payment of rates. The matter is one of legal process *not within the province of the Executive Government.*" What *do* the words in italics mean? We are always told that there are three parts of Government: the legislative, which makes the laws, the executive, which carries them out, and the judicial, which—well, quite what the judicial part of the Government does never gets clearly stated. What Mr. Gladstone practically means is evident from the concluding phrase of his sentence, which ran "and not subject to interference under the prerogative of the Crown." But does not the incident reveal the traditional, but illogical, use we make of words? The "Executive Government," with capital letters, does not include the police or prison authorities, or the magistrates, who yet, whatever else they do, "carry out the laws."

THE Catholic Church of the Middle Ages was a universal society. As the peoples of Europe grew into a realisation of nationality, the various States came into conflict with its authority, and especially with its head, the Bishop of Rome. This is the explanation of the political side of the Reformation of the sixteenth century—a stage in the long conflict which existed before that period and has remained ever since. Such conflicts must needs be between *any* central government and local governments, each naturally striving for the exaltation of its own office. Modern examples are not lacking. Unions of "labour" against "capital" and unions of capital against labour show signs of becoming "international." The Salvation Army knows no distinction of country or State, and therefore has to reckon with these. And our latest news is that Chinese Christians are following the movement of China for the Chinese, by expressing their desire for freedom from the "foreign" societies which have converted them, and for an independent Chinese Christianity. We have heard the opinion expressed by one who ought to know, that India will never become Christian until a "heresy" arises there.

THE revolution in Russia is still in progress. The elections for the Duma are taking place, and we are waiting with eagerness the working of this new experiment. Whose instrument will the Duma be? Will it be like the mediæval English parliaments, called together for the monarch's purpose, and only incidentally and after long struggles coming to express the complaints of the people? or will it become the weapon of the more "advanced" parties, and take up the attitude of seventeenth-century English parliaments, that of suspicion of the Government and chronic hostility thereto? If the latter alternative prove true, will there be a civil war between monarch and Duma? and how would that end? Meanwhile we notice that according to the official programme there is to be a distinction similar to that between mediæval English ordinance and statute. The monarch may in the intervals of sitting legislate temporarily.

ITEMS OF INTEREST.

GENERAL.

THE Board of Education has just issued a revised edition (Form 123) of the circular—which appeared first in the autumn of 1904, and was dealt with fully in THE SCHOOL WORLD (Vol. VI., p. 382)—on the teaching of English language and literature in secondary schools. As to the texts prescribed for study in each of the four years of the suggested course of work, the revised circular says that texts taken from one author, or more than one, should be planned out for completion within each term, and each year's work should include both prose and verse. Equal thoroughness of treatment, the circular continues, need not, and indeed should not, be given to all portions alike of the text studied; discrimination should be exercised as to which portions should be dealt with in detail, and which should be handled more lightly. It is recommended that, so far as possible, the exercises connected with the text

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and subject-matter should be arranged so as to arise naturally out of the text, or to be connected with it closely. The suggestions as to texts which may be studied during the four years' course have also been modified; teachers of English literature should therefore take an early opportunity of making themselves acquainted with the revised circular.

A clause has been inserted in the Education Bill now before Parliament which, if it becomes part of the forthcoming Act, will put an end to the Teachers' Register. A memorandum issued by the Board of Education details the steps which led to this decision. It has, the Board states, become clear that the existing regulations for registration fail to carry out the intention of Parliament, and that there is no prospect of so amending them as to comply with the directions of the Legislature. It cannot really be maintained that the recent proposals of the Consultative Committee for amending the regulations for registration would remove the obstacles to the success of the Register. The Board believes that suitable alterations in their own regulations and in schemes for secondary schools would do as much to encourage the training of teachers for secondary schools, in the absence of a register, as would be the case were any practicable scheme for registration super-added. While acknowledging the existence of some measure of grievance in the case of a certain number of individuals as the result of the abandonment of the Register, the Board is convinced that there is no alternative course which would result in the establishment of a satisfactory Register of Teachers, as required by the Act, without at the same time imposing even greater hardships on many persons.

The annual conference of the National Union of Teachers was opened on Easter Monday at Scarborough. More than 2,000 delegates were present, representing 486 branches of the Union, and deputations attended from other associations of teachers in Scotland, Ireland, Belgium, Switzerland, and Holland. The president, Mr. T. P. Sykes, Council School, Great Horton, Bradford, delivered his address, in the course of which he dealt with the Education Bill. The financial aspects of the Bill were first discussed, and the education machinery set up by the Act of 1902 was then reviewed. The question of religious instruction in primary schools was handled temperately, and chiefly from the points of view of the school and the child. Speaking, towards the close of his able address, of the needs of individual children, Mr. Sykes said the classes are twice too large. The essential thing in teaching young children is to help each one separately and to pay attention to their varied needs, but against this obstacle of large classes the most skilful teacher cannot prevail. His skill has perforce to take a new form. He adapts his methods to the needs of the class, and excels in the lucid presentment of a subject to rows of listeners, rather than in stimulating intelligence. The result is that in training to think the primary schools are weak. The nation has not yet given the primary-school teachers their chance. Surround the teacher with reasonable conditions of toil, and he can no more help teaching than an artist can refrain from putting on his canvas the lights and shadows of a lovely landscape in the midst of which he finds himself. The greatest educational force a teacher can bring to bear upon his pupils is his own life constantly lived before them. In their eyes he, like father and mother, has solved the mysterious problem of existence—in many cases heaven only knows how inadequately. He has no doubts and worries, whilst the children have many. To the teacher all is easy and plain sailing; it is the little children who find mountainous difficulties before them. But in after years the recollection of that calm, cheerful life lived before the children in the schoolroom from day to day may prove in times of trial and stress to their matured and harassed minds as "the shadow of a great rock in a weary land." Then would come the teacher's exceeding great reward, but not here and now. "Inasmuch as ye did it unto the least of these little ones, ye did it unto Me."

The Education Committee of the London County Council has drawn up a report upon the question of providing additional training accommodation for teachers. The committee assumes that the Council will desire to secure as soon as possible that all new teachers appointed in London public elementary schools shall be certificated and trained. Assuming the average professional life of a teacher to be ten years in the case of a woman and nineteen years in the case of a man, 1,122 women and 295 men will be required to make up the annual wastage in London elementary schools. This number, however, makes no provision for new schools, and it appears, therefore, that 1,500 may be taken as the approximate number of new teachers that will be required annually. Towards meeting this annual requirement the training colleges within the county of London provide about 915 teachers. The Council in December last adopted a proposal to provide a day and residential training college for women at Avery Hill, and this will reduce the deficiency to 455 places. The committee thinks that the Council should take steps to provide sites, and, as far as possible, buildings for the remainder of the current demand. They are of opinion that the sites should be chosen with reference to the localities from which the students will be drawn. Considering the existing provision, the committee says that a college is required for south-west London, another is required in west or north-west London, and a third in north or north-east London, each providing 200 places or 100 students annually. The committee thinks that the colleges should be established primarily as day colleges, but that they should, if possible, contain provision for residential students as may be required.

On the recommendation of its Education Committee, the London County Council has decided that an annual leaving examination in the ordinary English subjects of instruction, to take the place of the merit certificate examination, shall be instituted for the ordinary graded public elementary schools maintained by the Council for the examination of pupils at the age of fourteen, and that the examination shall be termed the "elementary school-leaving examination." Also that the examination shall be the same for all candidates, and that a statement shall be made on the certificate of each successful candidate recording the position taken during the preceding school year at the school examination in those subjects of instruction, if any, which have been taught at the school but are not included in the leaving examination. The leaving examination is to be confined to the ordinary English subjects, viz., dictation and composition, arithmetic, freehand and model drawing, plain needlework, history, and geography. In all written subjects the examiners will be instructed to take into account the quality of the handwriting.

A course for helping women teachers desirous of extending their knowledge of nature-study will be held at the Horticultural College, Swanley, from July 30th to August 11th. Most of the instruction will be given (weather permitting) out of doors, rambles in the country under the

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guidance of experienced teachers being the chief feature. The introductory address will be given by Mr. A. D. Hall, director of the Rothamsted Experiment Station, on July 30th. Combined excursions for studying birds, pond life, insects, wild flowers, trees, and grasses in their different environments have been arranged. A speciality will be made of the study of pond life, and the life-history of the Lepidoptera and other common insects. The college gardens, greenhouses, orchards, farm, and fruit-preserving appliances will be in working order, and students will be able to obtain an insight into the work carried on in each department. Demonstrations and instructions in simple gardening, and on the care of school gardens, will be given. Demonstrations in dairying and poultry keeping will also form part of the work. As far as possible the open-air studies will take place within easy distance of the college, but excursions will be arranged to districts with varying soils and climate, and the accompanying variety of natural objects. Students having bicycles are advised to take them, as it will then be possible to go further afield without the trouble of railway journeys. It is hoped to combine the natural history excursions with points of antiquarian, artistic, and other interest in outlying districts, and endeavour will be made to render the course useful both for home life and school work. Intending students should apply to the principal at the college.

TEACHERS who have passed the examination for Government certificates under the new regulations of the Board of Education, provided that they have obtained distinction in Section F and in one of the Sections G, H, I, J, K, are in future to be exempt from examination in all the subjects, except theory and practice of education, required for the diploma of Associate of the College of Preceptors.

THE report of the twenty-second year's work of the Association of Assistant-mistresses in Public Secondary Schools, which has now been published, is exhilarating reading. Unless schoolmasters develop a greater enthusiasm for education, and evince more earnestness in discussing and grappling with educational problems, the future of English education—elementary and secondary—will rest with the women. Students of education are becoming more and more impressed with the self-sacrificing devotion to educational work shown by the mistresses in our secondary schools for girls. While not neglecting those questions of administration which will influence their future status and comfort, schoolmistresses seem more ready to give their best efforts to the improvement of educational methods and to the study of the necessities of the girls they are expected to educate. We would commend the report to our readers as an example of well-directed enthusiasm.

THE twenty-first annual report of the Council of the Teachers' Guild contains abundant evidence of the continued activity of this comprehensive association of teachers and other educationists. The Guild, during the year with which the report deals, had under consideration most of the educational problems of pressing importance. We welcome especially the attempt which is to be made to resuscitate the "Education Society" within the Guild. We cordially agree with the council that there is plenty for such a society to do, for, after all, teachers should be more concerned with education itself than with educational politics. It is proposed that important parts of the work of the rehabilitated society shall be, first, the planning of organised experiments, properly apportioned among competent individuals, the results of which will be brought together and collated from time to time; and secondly, the publication in easily attainable form of the scarcer works of past writers on education. We shall look forward with interest to the June number of the *Teachers' Guild Quarterly*, in which the full scheme of the Education Society is to appear.

THE Executive Committee of the Headmistresses' Association has passed the following resolution and forwarded it to the President of the Board of Education:—"That we regard with dismay and regret the proposal for the abolition of the Teachers' Register, which, as regards Column B, even in this early stage of its operation, before the permanent clauses have come into effect, has done much to promote the solidarity of the teaching profession, to raise the standard of the qualifications of teachers in all kinds of secondary schools, and to cause the formation of sounder educational ideals than have generally prevailed hitherto. We are of opinion that none of these ends can be secured effectively by regulations of the Board of Education in connection with grants to secondary schools, and that such increase of direct official pressure is in itself deleterious to education, as destructive to that sense of freedom in which originality and initiative thrive, and in the end sure to deter many persons of independent mind from entering the profession of teaching. We trust that even now some means may be found for saving that portion of the register which affects the teachers qualified to teach in secondary schools."

THE Central Education Committee of the Society of Friends has published a concise and useful pamphlet on the training of teachers for public elementary schools. Full particulars are given as to sources of information, and alternative courses of study for an elementary teaching certificate are outlined. Copies of the *brochure* may be obtained from Mr. Charles E. Stansfield, 29, Upper Redlands Road, Reading, price 2d. post-free.

IN addition to the Clift-Courtauld and Pfeiffer scholarships to be awarded in June, the Council of the Bedford College for Women, London, offers two Deccan scholarships on the result of the entrance scholarships examination, one in arts, value £40 for three years, and one in science, value £60 for three years. The Deccan scholarships will be awarded only to candidates who wish to qualify themselves to earn a living, and cannot obtain their university education without pecuniary help. Candidates applying for these scholarships must submit with their entrance forms a written statement of their circumstances.

SUGGESTIONS for the celebration of Empire Day have been issued for the use of schools by the League of the Empire. A new lecture, by Mr. W. K. Stride, of Exeter College, Oxford, has been published, called "A Trip round the Empire," from London to Liverpool. The lecture is divided into six sections, and is a suggestive one for teachers. It can be given as a whole as an Empire lecture, or the separate sections dealing with the different parts of the Empire can be specially worked up by the teacher. The lecture can be illustrated by slides or sets of tableaux. Copies of the lecture may be obtained at the offices of the League, Caxton Hall, Westminster, S.W.

WE have received copies of two of the sections—dealing with higher education—of the handbook prepared for the Education Committee of the County Council of the West Riding of Yorkshire. One pamphlet gives full information as to the scholarships, free studentships, and exhibitions offered for competition by the committee, and the other

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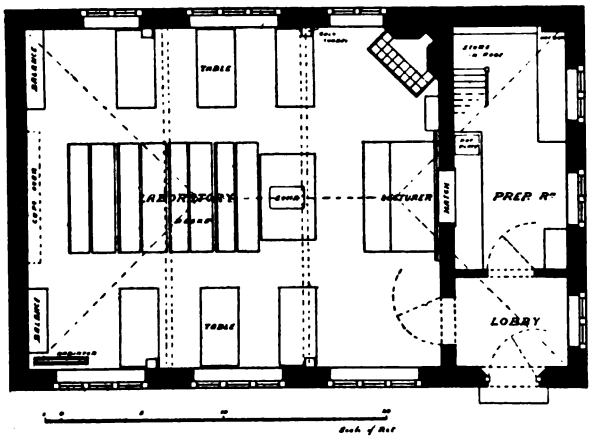
provides full information on the instruction and training of pupil-teachers. It is clear that promising youths of small means who have the good fortune to reside in that part of Yorkshire are able to obtain judicious assistance to enable them to carry their education as far as their faculties enable them to go.

A new laboratory has just been opened at Forest School, Walthamstow, Essex, and we are able, by the courtesy of the architect, Mr. Alan E. Munby, to publish a plan of the building. It is a physical laboratory, chiefly for the use of Army candidates taking physics. The building stands on the boundary of one of the school playgrounds, and the floor is of wood blocks. The fittings are in deal and pitch pine, and all iron is excluded from the tables, the gas-pipes over being of brass; each of the tables accommodates two boys, all of whom face the lecture table and get a good side light. Over the tables are stone corbels for galvanometers. Dark blinds enable all light to be excluded when desired. The radiator is worked by the open fire, which also heats a hot plate for frictional electrical apparatus, while a Fletcher heater supplies hot water. The building is lighted by gas, inverted mantles being employed to avoid shadows. The desks and seats increase



Plan of New Physical Laboratory, Forest School, Walthamstow.

slightly in height from the front one next the large sink table, which is half covered with lead. The roof is collar sealed, and contains good storage, arranged by sealing the store and lobby with a flat ceiling at a lower level. Though not connected with the existing chemical laboratory and lecture-room, the building is close to them.

The Cantonal Council of Education in Zürich has issued a programme relating to the holiday courses for primary and secondary teachers, to be held in the town between July 23rd and August 4th. These lectures are intended, in the first place, to meet the needs of the cantonal teaching staff, but foreigners are admitted on an equal footing with natives. Though there is nothing in the programme designed to bid for the foreigner's patronage, there is an abundance of material which will attract the specialist who is sufficient master of German to understand the courses. The fee for the course is 25 francs, and the work will evidently be of a high standard. The council has no desire to attract the schoolmaster who seeks a means of killing time during the holidays. Neither does it arrange the courses so that it may afford a pittance to such of the local teaching staff as may be willing to give diluted versions of well-known text-books to mixed classes of foreigners. The English teacher will find most help in the classes for the study of children. There will be a course of lectures on psychology, and others on the treatment of school epidemics, the medical inspection of children, and the treatment of those suffering from arrested development. In addition to these there will be a special course of science and a special course of languages. In the latter great attention is being given to French, a subject which is receiving every encouragement; and good judges see in a scientific system of phonetics a means of improving the local pronunciation of German. Prof. Vetter is to give a series of lectures on the main characteristics of modern English literature, and Prof. Blümner will discourse on ancient Athens. The usual festivities are being arranged and the conducted visits to the National Museum are sure to be well patronised in a land where patriotism is maintained by high traditions.

The annual report of the City of London School Modern Side Saturday Club shows how boys can be taught the wise use of leisure hours. The club provides its members with opportunities to visit places of interest in town and country on Saturdays, and supplies an excellent antidote to "loafing"—a pastime still too common among boys attending day-schools. The idea of the club deserves to be copied in other schools.

After showing signs of a disturbed condition for many months, Vesuvius arrived at a state of active eruption early in April. Lava streams issued from the central crater and from fissures formed in the flank of the volcanic cone, while immense quantities of dust and fragments of rock were ejected with explosive violence. The phenomena appear to have been those of a typical eruption, in this respect differing from those presented by the eruptions of Mont Pelée and the Soufrière of St. Vincent in 1902. There were (1) violent explosions, caused by the ejection of steam and gases; (2) bright glow seen above the volcano at night, due to the reflection from glowing lava upon the steam above; (3) darkness during day, caused by the formation of clouds and masses of volcanic dust; (4) thunder and lightning, as the result of electricity produced by friction of escaping particles against the vent and against one another; (5) earthquake shocks and rumbling noises, produced by explosions of steam and disruption of rocks below the earth's surface; (6) rain charged with dust, due to the condensation of a mixture of steam and volcanic dust; (7) streams of lava issuing from crater and through cracks on the sides of the volcano.

During the eruption of 79 A.D. the dust and other fragmentary products which fell through the air buried Pompeii, while Herculaneum appears to have been buried in mud formed by the mixture of volcanic materials with torrents of rain. In 1631 another terrific eruption occurred, and in 1872 the volcano again burst into activity. That was thirty-four years ago; and the present disturbed condition of volcanic centres seems to afford some justification for belief in the cycle of that length found by Brückner in the records of most terrestrial phenomena. Moreover, the sun is now in much the same condition as regards the distribution and frequency of sun-spots and eruptions as it was thirty-three years—that is, three sun-spot periods—ago, so that the state of solar activity may be one factor in determining the recurrence of terrestrial volcanic disturbances. The almost complete destruction of San Francisco by an earthquake and fire on April 18th, at 5.13 a.m., San Francisco time, is another terrible reminder of the present unstable condition of the earth's crust.

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THE principal crater of Vesuvius was in active eruption on March 28th, when a stream of lava commenced to flow from a crack in the side of the cone. A few days later it became evident that the Vesuvius district would be severely affected by the eruption. The flow of lava increased in intensity, and on April 7th the village of Bosco-Trecase was destroyed by lava streams. The principal crater was then in violent eruption, ejecting masses of incandescent rock mixed with volcanic ash and other fragmentary material. Naples was covered with the ash to a depth of several inches, and the dust appears to have been carried so far as Montenegro. On April 9th a lava stream had almost reached Torre Annunziata, but a diminution of the activity then became apparent, and the volcano has since been quieting down, though on April 10th there was still a discernible movement in a stream of lava branching off near Torre Annunziata toward Pompeii.

MR. F. A. HILLIARD, who was recently appointed headmaster of Bristol Grammar School, has, at the request of the governors of Worcester Grammar School, withdrawn his resignation of that appointment, so that a new appointment will have to be made to the Bristol Grammar School.

THE third annual conference of the Girls' School Music Union is to be held at 1.30 p.m. on May 5th at the Guildhall School of Music, Victoria Embankment. The presidential address is to be delivered by Mr. W. H. Hadow on "The Training of Taste." Applications for tickets may be made to Miss Cecilia Hill, Wentworth Hall, Mill Hill, N.W.

WE have much pleasure in directing the attention of teachers and others to the twelfth season of Mr. Charles Fry's Shakespearean *matinées*. The plays will be given at the Royal Court Theatre, Sloane Square, London, S.W., on the afternoons of Saturday, May 5th, May 12th, and May 19th, at 3 p.m. The plays to be performed—in costume and on a draped stage—are *The Winter's Tale*, *Merry Wives of Windsor*, and *King Richard III.* Teachers of higher forms studying these plays will be glad of the opportunity of arranging for their classes to see the plays performed.

THE first open competition for appointments (three) in the new Army Accounts Department, and the second for appointments (five) in the Exchequer and Audit Department, are announced to be held concurrently with the Army Entrance examinations beginning on June 26th. Entries must reach the Secretary, Civil Service Commission, before May 24th. The subjects of examination are:—Class I., mathematics i., Latin, French or German, English, geography; Class II., mathematics ii., German or French, Greek, history, science. All the subjects of Class I. may be taken; only two of Class II., and if one of these is a modern language it must be different from that selected in Class I. The limits of age are eighteen and twenty. The Army Accounts Department, constituted as a result of one of the recommendations of the Esher Committee, has been started with officers of the Army Pay Department and War Office clerks; the former can, if they wish, retire at the comparatively early age of their former conditions of service; the staff is to be homogeneous; promotions are to be governed by selection. The prospects are in every way very good. The work is done at the headquarter stations of the various commands, and, in time of war, may take the officers of the department to the base of operations.

A COMPETITIVE examination for not fewer than ten appointments as probationers for the Indian Forest Service will be held on August 28th. Applications for admission must be made to the Secretary, Judicial and Public Department, India Office, Whitehall, S.W., not later than June 30th. Candidates must have attained the age of eighteen, and not attained the age of twenty-one, on January 1st last. A candidate must have passed, or must undertake to pass before October, Responsions at Oxford or the Previous at Cambridge, or some one of the other examinations held by those Universities or by those of London or Dublin, or by the Joint Board of the Scottish Universities, or by the College Entrance Examination Board of the United States, and recognised by the Universities as equivalent to Responsions or to the Previous, or must have passed an examination at some foreign university which, in the opinion of the Secretary of State in Council, is at least equivalent to any one of the examinations named above. The subjects of the competitive examination are:—(1) mechanics and physics; (2) chemistry; (3) botany. The period of probation will extend over about three years. For the first two the probationers will be required to undergo a special course of study at Oxford, and to become members of the University if not so already. During the third year they will receive practical instruction, visiting under suitable supervision such continental forests as may be selected for the purpose.

THE probationers will be required to defray all expenses at Oxford, and during the third year, which will consist of three terms, to pay in advance £60 a term, for which the Secretary of State for India will provide (1) board, lodging, and washing; (2) travelling expenses; and (3) fees to local forest officers, &c. An allowance will be granted to each probationer, on signature of his agreement, of from £50 to £100, according to the degree of proficiency and diligence shown by him during his practical course on the Continent. An assistant conservator of forests, to which grade probationers are ordinarily appointed, receives Rs. 350 a month. Deputy conservators receive up to Rs. 900, and conservators up to Rs. 2,000 a month. During long leave, amounting to six years in the course of the service, half or one-quarter salary is allowed; during privilege leave, which may be granted to the extent of one-eleventh part of the time that an officer has been on duty without interruption, he retains a lien on his appointment, and receives the salary he would have received if on duty.

THE Commissioners have announced that after December 31st, 1906, the subjects of examination for the situation of Assistant of Excise (for which open competitions are usually held in May and November) will be handwriting, arithmetic, English composition, geography, English history, mathematics, and elementary chemistry (two only of the last three). At present the first four subjects only are taken.

SCOTTISH.

THE Carnegie Trust, as indicated in its annual report, has found it necessary to reconsider the regulations for the payment of class fees. Pending a final settlement after consultation with the University authorities, the following provisional regulations will be enforced during the present year:—(1) Beneficiaries failing in their degree examination in any subject or group of subjects after two attempts will not have their fees paid for the following session. (2) Payment of class fees shall be confined, as a rule, to those classes required for an ordinary degree, but payment may be made of the fees of honours classes or of classes dealing with a distinct extension of the range of work belonging to the obligatory classes. In all such cases, however, applicants must have passed the ordinary graduation examina-

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tion in the relative subject. For the summer session, 1906, the professor's recommendation based on previous record will be accepted in lieu of a pass.

A minute has just been issued regulating the distribution of the General Aid Grant for this year. This grant, it may be recalled, comes to Scotland through the operation of the financial clauses of the English Education Act of 1902. The minute proposes to distribute the grant in four main directions:—(1) To aid the capital expenditure on buildings for the training of teachers, on providing or extending central technical institutions, and on institutions for defective children. (2) To increase the grants to the secondary education committees for the purpose of increasing the number of bursaries for secondary education. (3) To make payments in aid of a properly qualified staff in the smaller schools. (4) To afford greater educational facilities in the Highlands and islands, and to encourage the teaching of Gaelic in those areas.

By arrangement with the Army Council, the Leaving Certificate (University Group) of the Scottish Education Department confers upon its holders exemption from the "qualifying examination" of the Army Education Council. As the requirements of the Leaving Certificate are considerably higher than those of the "qualifying examination," it has been represented that considerable hardship has been thereby entailed on Scottish pupils desirous of obtaining commissions in the Army. The question of granting further facilities to such candidates has been for some time under the consideration of the Education Department and the Army Council, and the following modifications have been agreed to:—Candidates for Army certificate must (1) be pupils of approved schools, and not less than seventeen years of age, (2) have obtained the Intermediate Certificate and completed a post-intermediate certificate curriculum of at least one year to the satisfaction of the teachers and headmasters of their respective schools. The subjects of the Intermediate Certificate must include English, geography, history, mathematics, and two other subjects. These additional subjects may be either two languages or experimental science and one language. A list of approved schools will be published monthly in the Army List. Applications for recognition may be addressed to the Education Department forthwith.

The Leaving Certificate examinations will begin this year on June 20th, and will finish on June 28th. In the circular announcing the date and hours for the various subjects, the Department again calls attention to the practice of presenting candidates in the same grade as that in which they have already passed. While strongly deprecating such procedure where only single subjects are concerned, the Department admits that this may be necessary for a few years in the case of candidates for the group Intermediate Certificate.

In the House of Commons, Mr. Gulland, M.P., asked the Secretary for Scotland whether, in view of the effect upon education in Scotland of the repeated failures of the late Government to pass their Bills, and the difference of opinions about rates and areas, he would appoint a small Boundary Commission to consider in each district what area, or combination or division of areas, would be most suitable in the interests of primary and secondary education. Captain Sinclair stated in reply that he could not see his way to the appointment of such a Commission, as the question of area would depend largely upon the general principles of the Bill, and the proper place for a Boundary Commission would be after, and not before, the introduction of a Bill.

The Scotch Code for 1906, which has just been published, contains few alterations on last year's. An addition to F in Appendix IV. has been made presumably to meet the objection of those who complained that Latin and Greek had no official place in the list of subjects of the higher-grade schools. It is greatly to be regretted that no attempt has been made to meet the much more serious objection that the curriculum of such schools allows of little, if any, differentiation between the courses for boys and girls. Compulsory mathematics and compulsory science for all girls is altogether indefensible on educational grounds, particularly when the science served out to these girls in nearly all cases is physics and chemistry. Science, once the Cinderella of the curriculum, has now become its spoilt child, and lords it over every other subject.

A circular has been issued from the Education Department intimating considerable modifications in the requirements for the Intermediate Certificate. Instead of three lower-grade passes and one higher-grade, four lower-grade passes will be demanded, but these must all be taken at one sitting. Slight deficiency in any one subject may be compensated by excellence in another. Provision is made also for taking into account the teacher's opinion of the fitness of each candidate before awarding or withholding a certificate. After 1907 no school will be permitted to present pupils for the Leaving Certificate (University Group) examination unless its curriculum has been approved for the intermediate stage. An approved curriculum must provide for instruction in English, mathematics, languages, or science. The circular expressly states that a rigid uniformity of curriculum will not be required, but, having regard to the treatment of the higher-grade schools, there is a general suspicion that the only freedom that will be left to schools will be Hobson's choice. At the same time, it would be ungracious not to acknowledge that the new circular marks a great forward step in educational policy. The practical abolition of the examination in isolated subjects, and the recognition of the teacher's judgment in determining the success or failure of candidates, must commend themselves to everyone acquainted with the vagaries of examination results on the old lines. Teachers under the new conditions will possess greatly extended power and responsibility, and the success of the Department's enlightened policy will depend in great measure on the faithfulness and sound judgment that they display in exercising them.

IRISH.

Irish education is now in the expectant stage. The dry bones seem to be moving. New life is apparently about to take possession of them, but what form of life no one as yet knows. It is to be hoped that it will be a healthy flow of animation through the whole system, and not a merely galvanised quiver depending upon the action of Boards at headquarters. We are hopeful, and our hope is inspired by the debate in the House of Commons at the end of March on Mr. Murphy's motion "that in the opinion of this House the provision for education in all its branches—primary, secondary, and university—is unsatisfactory, and that the interests of the Irish people have been, and are, suffering most ruinous injury from the long delay in applying a remedy." The motion was eventually withdrawn, after speeches from all sides in sympathy with the motion. Mr. Butcher's was especially distinguished, as Mr. Bryce said, for "fairness, singular elevation of tone, and beauty" in his appeal for a settlement of the university question. Mr. Bryce's own speech was an appeal for time. Of its tone, little complaint can be made. He admitted that the salaries of Irish teachers are inadequate and much below those of Scotland and England,

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but so many knots have been tied during the last sixty years that it is difficult to unravel them all at once. Grants for buildings are urgent, and £35,000 will be assigned this year for national school buildings. The great drawback to national education is the lack of local interest, and it is desirable to have less centralisation. Mr. Bryce believes a satisfactory scheme of university education can be found, and in school education he looks to the consolidation of small schools, the improvement of school buildings, the association of the people of localities with school work in those localities, the improvement of attendance, and a union between the systems of primary and secondary education. The National and Intermediate Boards should be amalgamated and brought into closer connection with technical education. The difficulties in the way are partly religious and partly due to the backwardness of Irish opinion. The Chief Secretary hopes to begin by improving the status of teachers and the erudition of the schools, and by consolidating the different educational authorities.

Two committees of inquiry have been appointed. The first is into the arrangements of Trinity College. It will inquire into the revenues of the college and the way in which they are applied, its government and administration, the teaching staff, and the system of examination and rewards. It will also deal with the method of awarding fellowships. And, lastly, it will consider the place Trinity College ought to occupy in the higher education of Ireland with a view of making it more useful to the people of Ireland at large. The commission is to be small and non-political, and is to act promptly. This may help to solve the university problem. One of the fellows of Trinity College, Mr. Culverwell, the professor of education, has made a public appeal for a consideration of what reforms would make the college acceptable generally to Roman Catholics, suggesting the duplication of certain chairs and a reorganisation of the Board.

THE other committee will inquire into the working of the Department of Agriculture and Technical Instruction. It is to report whether the provision of the Act of 1899 which constituted it, and the methods it has adopted, are shown by experience to be well adapted to Ireland; what changes, if any, are desirable; also upon the relations of the Department to the Council of Agriculture, to the Board of Agriculture, and to the Board of Technical Instruction; upon its relations to local statutory bodies, upon the funds at its disposal, and the modes of employing them, and upon its position in regard to other departments, especially those charged with educational functions.

THE Board of Technical Instruction is at present considering the necessity for further funds to enable local authorities to erect suitable buildings for technical schools; the training and employment of teachers of commercial subjects; provision for a further central course for the training of manual instructors; and proposals in regard to higher schools of domestic economy. The Board met the consultative committee of intermediate schools on April 3rd, and discussed the programme in science and drawing for 1906–7.

INSPECTION in intermediate schools still hangs fire. The late Government year after year refused to sanction the appointment of permanent inspectors, probably with some intention, which never came off, of dealing with the whole educational problem. Temporary inspectors were appointed in two consecutive years, but clearly this was an unsatisfactory procedure, and turned out badly. Mr. Bryce, questioned on the matter in the House of Commons, said that the Government still consider it undesirable to create fresh vested interests in a department which may be the subject of some change, and added that he is still giving attention to the matter.

ARCHBISHOP WALSH, in a letter to the public Press, has made the Roman Catholic position clear in regard to one point in the university question. Mr. T. W. Russell had stated that Roman Catholics would be satisfied with the University College in Stephen's Green if its status were improved and if it were adequately endowed. The Archbishop says this is not so. The demands of the Roman Catholics, as expressed in the Report of the Royal Commission on University Education, are for an entirely new institution in Dublin, whether a college or a university, and not a vamped-up college in Stephen's Green or elsewhere. It must be on a scale to meet the educational demands of Ireland, taken as a whole, and must be endowed on a liberal and adequate scale. This cannot be satisfied by any reorganisation of the college in Stephen's Green. Could it be satisfied by a reorganised Trinity College?

THE Provost of Trinity College, one of the Commissioners of National Education, at the opening of a new schoolhouse at Largymore, near Lisburn, explained some of the difficulties of primary education. On the introduction of semi-scientific instruction in 1902, the old plans for buildings became inadequate, and grants were stopped until new plans were approved. The Treasury then offered a lump sum of £140,000 on condition that no more would be asked for. This was, of course, refused, and since then there has been a deadlock. In 1902 there were applications before the Commissioners for 419 new schoolhouses and 597 improvements, and since then there have been 146 fresh applications. He argued that since education is compulsory, the State is bound to provide proper buildings, and cannot refuse or limit the amount. Another difficulty is the question of amalgamating small schools. In theory the thing is simple; in practice very difficult. The difficulty is partly religious and partly a matter of distance. It is not a question, however, of uniting Protestant and Roman Catholic schools, but of uniting various small Protestant schools. The schools act as feeders of the Church, and whichever denomination sacrifices its school risks the existence of its church in that locality. This, however, does not conduce to religious toleration. On the matter of distance, infants cannot be expected to walk two miles to school, and, when their short hours are over, must they wait an hour or two for the older children to see them home? But surely this difficulty might be solved, as it is in parts of Germany, by school vans to take children to school and bring them back when they live at a distance.

WELSH.

THE further development of the Welsh University Celleges is limited by the permanent available finance. In a deputation from the colleges to the Welsh members of Parliament, it was pointed out that Welshmen, owners of property, and indeed all classes had contributed liberally to the Welsh University Colleges—and in proportion to their means splendidly. The contribution of Wales to the colleges must not be judged by the absolute amounts, but by the amounts relatively to the resources of the community and to the advantages conferred by the institutions on the country. Principal Reichel showed that, taking the area of Wales as one-seventh and the population as one-eighteenth of that of England, the Principality should have had, if endowed for education on the same scale as England. (*a*) according to area £90,365, (*b*) according to population £35,147.

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It is proposed to extend and alter the Barry County School Buildings. Plans have been approved by the Governors, and have been sent to the County Council Education Committee for confirmation. The estimated outlay on the schools, to provide accommodation for 350 scholars, is £7,000. There will be a large central hall, which may also be used as a dining-room, and shower baths for boys and for girls.

Dr. Macnamara at Mold gave some statistics which place Wales in a favourable light educationally. He stated that of the money sent down from the Imperial Exchequer since 1890, under the Local Taxation Account, Scotland spent 30 per cent. of her subvention in relief of rates, England 5 per cent., and Wales every farthing upon education. In England, excluding London (which was a very special case), the amount of rate spent in education was equal to 7d. in the pound, in Scotland 9·3d., while in Wales it reached 11·7d. England spent 3s. per head of her population on education, Scotland 4s. 10½d., and Wales 5s. 8¾d.

The Flintshire County Council has received a deputation from the Temperance Association of Flintshire and Denbighshire urging the systematic teaching of temperance in the schools. It was suggested that the school teachers, as far as possible, should give the instruction. It was pointed out that if a total abstinence test were introduced, it would be resisted by the National Union of Teachers. A representation of the primary school teachers on the Education Authority stated that his experience of the temperance reading-book was that it was the "driest" thing in the school. He also thought if the subject was taught in the primary school it should be taught also in the secondary school.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A. Dumas, Adventures in Switzerland. Edited by A. Wright. iv.+28 pp. (Blackie.) 4*d*.—Two stories from *en Suisse*, the first moderately amusing, the second a little gruesome. The editorial work is not of a very high order. The English in the "Note on Dumas" might be improved; thus we may well object to such an expression as "the point of departure between the Romantic and Classic Schools." The only misprints we have noticed are the dropping of a word after *autant* (page 11, line 36), and *mésure* (page 29). What advantage there is in adding after *blafarde* "an old High German word" is not at all clear.

E. About, Les Jumeaux de l'Hôtel Corneille. Edited by H. Havelock. 43 pp. (Blackie.) 4*d*.—A pretty tale in which the virtuous and studious brother prospers, and the would-be man of the world also does quite well in the end. From the introduction we cull the wholly delightful sentence: "It often strikes one that the more a Frenchman approximates to English ways and notions, the nicer and more decent he is apt to be." The notes are satisfactory, except for some altogether superfluous etymology. What reader cares enough about *jarret* to wish to be told that it is connected with Provençal *garra* and Breton *gár*? This is sheer pedantry.

La Chanson de Roland. By S. Barter and L. Duchemin. 40 pp. (Blackie.) 4*d*.—The fine old tale is here *racontée pour les enfants*. A simple introductory note says all that a child need know about the *Chanson de Roland*, and there are no notes. The text is excellent in its lucidity. Well illustrated, it would make a charming gift-book; as it is, it is a capital little reader.

Classics.

Translations into Greek Verse and Prose. By R. D. Archer-Hind. 244 pp. (Cambridge University Press.) 6*s*. net.—This is a delightful book for the lover of fine letters. Mr. Archer-Hind has a touch of genius in Greek composition; it is difficult to believe as we read that we have not some ancient classic before us. Prose Platonic and Herodotean, verse elegiac and lyric, of all sorts of measures—Mr. Archer-Hind moves with ease in them all. He has a wonderful tact, too, in his choice of metre and style. Herodotus would have delighted to read Malory and Sir John Mandeville in his own racy dialect; Plato might have thought, as he comprehended that strange and profound passage on music, of which De Quincey spoke so highly, that Sir Thomas Browne reasoneth well. Our Gothic roughnesses become in Mr. Archer-Hind's Greek clear-cut and refined; we seem to be reading a new book of the Anthology. The quality is throughout of the finest. Even in the twentieth century it seems, when emperors bag in hand solicit trade patronage from savages, fine scholarship is not dead. Mr. Archer-Hind is worthy of the university which trained Porson, Shilleto, and Jebb; and as a composer we think he is equal to any of the three.

Cicero Pro Lege Manilia. With Introduction, Notes, and Vocabulary. By Prof. W. J. Woodhouse. xl.+128 pp.; with illustrations. (Blackie.) 2*s*.—This book presents a pleasing contrast to the general run of school-books. It is clearly written by a man who has a good knowledge of his subject. The introduction, dealing with the historical circumstances of the work, is provided with references to standard histories; and, what is more, at the foot of the page are quoted in full the allusions made by Cicero in the text to the historical events which are described. This strikes us as an excellent expedient for dispensing with a large number of notes. The pupil, after reading the introduction with these references, ought to be able to understand the allusions in the text, at least on a second reading of the text. This must have cost the editor considerable trouble, and it has been done very well. The notes also show a praiseworthy abstention from trivialities; they give a great deal of information in a compact and handy form. The book is fitted, therefore, for students of a somewhat advanced stage; it is certainly not fitted, in our opinion, for the schoolboy who requires a special vocabulary to every book he reads. Such a note, for instance, as that on the *equites* (p. 49) is quite unnecessary for the understanding of the text, however useful it may be for a pupil who is beginning to study Roman antiquities. The case is different with the notes on p. 57 (*scriptura*, &c.), which could hardly be left out. Thus it will be seen that the book suffers from the usual fault; the editor has not the necessary knowledge of the requirements of schoolboys at the different stages of their work, and so he mixes up what is suitable for the beginner with what can only be useful for boys in the highest forms. We may point out, in conclusion, one slip: the phrase § 21 (p. 61) *ex omni aditu* (wrongly written, by the way, *omnia*) is adverbial, however it may be translated.

English.

A Class-book of English Grammar. By W. E. C. Clarke and A. C. Muller. xi.+303 pp. (Longmans.) 2*s*. 6*d*.—This is the fourth edition of a book which from the outset was designed to be complete in itself, to the extent of enabling any student to cover the whole necessary ground for a foundation in English study. If it is not exhaustive, it is at least sufficiently full to enable those anxious to

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proceed further to do so with ease. The chapter on "Punctuation" will repay careful study, and the examination questions are of high merit. We think it a pity that the section devoted to the scansion of verse proceeds upon entirely familiar lines, and does not make even the slightest mention of the modern theory of periodicity in verse, which is certainly as well deserving of attention as the more antiquated and cumbrous and often unsatisfactory method of counting syllables.

Exercises for Parsing in Colour. By E. Hastings. 1–159 pp. (Edward Arnold.) 1s. 6d.—For all who demand grammar from young children, this book and its suggestions are admirable. The exercises are well chosen, and in capable hands should succeed. A word or two of explanation is required for the chart. The book may be had in three parts. So long as English grammarians insist on there being nine (is it nine?) parts of speech, when there are really only three or four, so long Miss Hastings's chalks will be inadequate in number.

The Function of Words. By M. C. Carman. 1–154 pp. (Sonnenschein.) 2s.—This is an English grammar, quite satisfactory, but not better than the well-known grammars. A good book on the "function of words" is still a desideratum.

Blackie's Standard Dictionary. iv.+444 pp. (Blackie.) 2s. net.—This is wonderful at the price. In outward form it resembles an enlarged volume in the notable "Red Letter" series, and in the way of dictionaries it is about the most profitable investment which a student of English for practical purposes can be persuaded to make. In a compact and convenient form it presents the essence, as it were, of many bulkier works, and in matters of pronunciation and word-definition it is thoroughly trustworthy and up-to-date. A key to pronunciation is printed at the bottom of every page, so that there can be no room for doubt or difficulty in this important respect. To dissolve all doubts as to the conjugation of irregular verbs, the correct plurals of irregular nouns, and so forth, the various forms which they can assume are given in full. The appendices are an important feature of this dictionary; two of these are both novel and more than usually convenient. One brings together a number of modern terms used in physics and engineering, and explains them with considerable fulness. The other is a pictorial index of mechanical movements and devices.

Essays in the Making. By Eustace Miles. 1–161 pp. (Rivingtons.) 3s. 6d.—Mr. Eustace Miles is indefatigable, and we gather that these notes are the outcome of lectures. Mr. Miles asks for criticism, and we would suggest that the book requires condensation and re-arrangement; and that more stress—much more stress—should be laid on the essay writer's individuality.

Tennyson's Ode on the Death of Wellington. 24 pp. *Shelley's Lines written among the Euganean Hills, and The Sensitive Plant.* 40 pp. *Byron's Ode to Napoleon.* 24 pp. (Blackie.) 2d. each.—These little texts with their notes are admirable in their way, and, like all the former publications in this series, will repay careful use.

King Henry IV. Part II. By J. W. B. Adams. 128 pp. (Horace Marshall.) 1s.—This little volume has been well done upon the lines familiar enough to students of the "Carmelite Classics." It is strongly bound, which is an attraction and an advantage.

De Quincey's The English Mail Coach and Joan of Arc. By M. H. Turk. xvi.+121 pp. (Ginn.) 1s.—Neither of these essays of De Quincey is well known except to students of his works. This educational edition ought to popularise them, for they deserve it. The editor's work has been well done, and his critical remarks are of considerable weight, though they are by no means lengthy.

History

Captain John Smith. By A. G. Bradley. viii.+226 pp. (Macmillan.) 2s. 6d.—The hero of this last of the "English Men of Action" series is the man whose name is inseparably associated with the founding of Virginia, and in especial with the fortunes of Jamestown, in the first decade of the seventeenth century. But his history is longer and broader than this. Before he went to America he had adventures in France and in the East fighting against the Turks, and after his return from Virginia he had a busy life in England urging colonisation in the northern parts of the continent, and actually died "Admiral of New England." Much doubt has been cast on the veracity of John Smith in his autobiographical books, especially concerning his relations with Pocahontas, the Indian girl. Mr. Bradley takes the favourable view, and urges much in its support. Wonderful as his experiences were, they do not exceed the bounds of probability. But the main impression gained from the perusal of this book is the resourcefulness and power of dealing with men of all kinds that were possessed by Smith. When he was present, all went well in Jamestown. When he was absent, all was wrong. The book is delightful reading for anybody, and should be in school libraries.

The Story of England and Wales. By J. Finnemore. xii.+243 pp. (Welsh Educational Publishing Co.) 1s. 4d.—We mentioned recently a book by the same author with the same title. That was a "junior book" suitable for Standard III. This is an "intermediate book" suitable for Standard IV. There is a goodly number of illustrations, photographic and other, in tints. The text is well written, and is all but up to date. Naturally, Welsh history has a larger proportion than usual, and this crowds the general work, so that the book is only a reader, and is especially scanty towards the end. Only sixty pages are given to the period after 1660.

The Romance of Empire. By P. Gibbs. xv.+478 pp. (Arnold.) 6s.—This is a book for the school library. It will please the fourth form. The author is enamoured with what he calls the "romance" of the story of the British Empire, but hopes that "the name will not impute (*sic*) the accuracy of the facts." It is written in an enthusiastic strain, and we must not be too particular. But we hope even the fourth-form boy will not be led away by such logic as this: "The imposition of taxes by the British Government was in itself a violation of the old law of Magna Carta which declared that no taxes should be raised without the consent of the Common Council of the Realm. As the American people had no representatives in the English Parliament, they were, therefore, taxed without such consent." And, in general, the book would have been better for a careful revision in points of grammar and printing. But there is a fine breeziness about the narrative which tells in the first half the story of British America and India, and in the second that of Australasia and South Africa. There are sixteen full-page illustrations and a (rather poor) index.

Lancashire: its Geography and History. 40 pp. (Pitman.) Paper 3d., cloth 4d.—A map of the county, plenty of pictures, large-print text, poems, and songs (with tonic sol-fa music), such are the contents of this booklet, well adapted to the junior classes of Lancashire schools.

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Geography.

Philips' Comparative Series of Large Schoolroom Maps: S. America. 74×59 inches. 16*s.*—This is a fine example of a well-known series of most excellent wall-maps. Drawn on a scale of 1 : 6,000,000, or just short of 100 miles to the inch, it is striking enough to catch the eye in any position on the wall of the "geography" class-room. Based on the orographical side of the subject, its familiar greens and browns emphasise the arrangement of highland region and river lowlands which is characteristic of the S. American continent. A judicious use of thick red lines indicates the political boundaries; railway and steamer routes are shown in black; towns are graduated with bold signs according to population. Like the rest of this series, it gives the purchaser more than his mere pound of flesh; it includes Central America and the West Indies, and colours them up to the sample of the mainland. It provides, too, three insets of interest:—(1) England and Wales on the same scale as the general map—a most useful feature, but one too often omitted; (2) a political map of S. America, coloured clearly, on one-fourth the scale of the large sheet; (3) a section across the continent from Iquique to Victoria (Brazil), which shows the extent of the great central plain of El Gran Chaco, as well as the relative lowness of the Brazilian plateau compared with the Andes. But we have praised the series—from the teacher's point of view—so often, that there is no need to repeat ourselves. Our simple advice is "Get it." The man—or woman—who cannot teach geography from these maps should take to manual training or mathematics.

The Home and Abroad Atlas. (Edward Arnold.) 8*d.*—This is a wonderful eightpennyworth. It contains twenty-four maps, many of them (especially the physical ones) very good, none of them overcrowded with names, and all of them fairly up-to-date.

Mathematics.

Geometry, Theoretical and Practical. Part I. By W. P. Workman and A. G. Cracknell. xii.+355 pp. (Clive.) 3*s.* 6*d.*—The number of text-books of geometry that have been published within the last three years is very great, and though none of them will probably be accepted as in all respects satisfactory, one must hope that there will be a gradual approximation to agreement on the leading features of a fundamental subject of elementary education. The rigid separation between theoretical and practical geometry has, we hope, ceased so far as the primary stages of school-work are concerned; even after formal geometry has begun, the practical side of geometrical instruction should not be lost sight of. The text-book under notice combines the theoretical and the practical in a most interesting manner, and shows on every page the skill and care with which the material has been put together. The greater part of the Introductory Course has already been referred to (The School World, Vol. VII., p. 211); the range of this Part of the complete text-book coincides, roughly, with that of Euclid's first four books, the logical sequence of the propositions following closely that of the Cambridge syllabus. Very great care is bestowed on riders, not only as exercises on theorems already established, but as introductory illustrations of the harder theorems about to be proved; one is almost inclined to the feeling that the work is overloaded with easy examples, though probably teachers will welcome the numerous exercises provided for every stage of the development. Occasional notes on fundamental difficulties will be of great service to thoughtful teachers; the caution shown in the treatment of the tangent as a line which meets a curve in two "consecutive points" is in marked contrast to the customary practice, and is fully justified. The book as a whole will compare very favourably with any of the recent works on elementary geometry, and is well worthy of the attention of teachers. Is it too late to ask that the name *Simson Line* (p. 311) should be discarded? No doubt Simson's name deserves to be held in reverence by all lovers of geometry, but Simson has no claim to the discovery of the *Wallace* Line.

Science and Technology.

A Manual of Carpentry and Joinery. By J. W. Riley. viii.+500 pp. (Macmillan.) 6*s.* net.—The acquirement of a thorough knowledge of carpentry and joinery must chiefly depend on the opportunities which a student may have of becoming acquainted in the workshop with practical details, such as the different kinds of timber in general use for constructive purposes, and the various forms of cutting tools. In addition to this practical training, he must, for further information, consult text-books, and this volume will be found to be very suitable for the purpose. The author first describes the sources, uses, and defects of the various kinds of timber, and then supplies chapters on plane and solid geometry and mensuration. The chapters on tools, which follow, include not only clear descriptions and illustrations of hand tools, but also excellent photographs of various kinds of wood-working machinery. The remaining chapters deal with joints and fastenings, floors, roofs, doors, windows, and miscellaneous carpentry constructions, including scaffolding, wooden-framed buildings, conservatories, and other subjects. A useful chapter on the mechanics of carpentry is included. Much care has evidently been taken with the numerous illustrations. These are clear, practical, fully dimensioned, and represent good practice. The summaries given at the ends of the various chapters, together with the questions chiefly derived from examination papers of the City and Guilds of London Institute, should be useful to teachers and students, more particularly those who are preparing for this examination.

Miscellaneous.

On Professional Education, with Special Reference to Medicine. By Prof. T. Clifford Allbutt. vi.+80 pp. (Macmillan.) 2*s.* net.—Here is some more sensible advice for the schoolmaster. The slow improvement in English secondary education is certainly not because our men in authority do not give advice enough. The schoolmaster, indeed, has been known to plead that it is the multitude of counsellors which confuses him in his work, shunting his endeavours repeatedly from one track to another. But there is such unanimity in this work of "scolding the schoolmaster, gibing at the schoolmaster, guying, afflicting and exasperating the schoolmaster in every conceivable way"—to quote Mr. H. G. Wells—that it is really time all teachers set to work with unanimity and earnestness to see if it is not possible to inaugurate a system of secondary education which will really educate our boys and girls—not instruct them, which, as Dr. Allbutt again points out, is a widely different matter. Then, instead of "the salient defect of the boy, as he leaves school," being "his subservience to a wooden routine or convention which seems there to be perpetuated," as Dr. Allbutt urges, our boys leaving school will have few defects and be remarkable for intelligence, quick imagination, and all-round resourcefulness. When Prof. Allbutt with his experience has to write: "at present in England the schoolmaster is complacent," it is clear there is much that is wrong, and we commend this thoughtful address to all teachers in the hope that they will translate its wise maxims into fruitful action.

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CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Equipment for Shooting in Schools.

I FEEL sure that the interesting article by Mr. C. M. Stuart in your April number will encourage many teachers to form rifle clubs for their pupils. At the same time, there must be many who, though desirous of teaching their boys how to shoot, will be deterred from doing so by reason of the considerable initial and annual expense entailed. Others, again, may be unable to secure a piece of ground suitable for a range. It may therefore be of interest to your readers to know that a successful rifle club may be formed and carried on at a cost greatly below that given by Mr. Stuart.

True, the rifle used will be an air rifle; but I do not think anyone who may choose to use such a weapon will regret having done so. An air-rifle club was formed at the Sheffield Pupil-Teachers' Centre some three weeks ago, and there is already sufficient evidence to show that the club has a very successful career before it. Mr. Stuart in his article says:—"It is better to shoot with air-guns than not to shoot at all, but boys do not take so much interest in it as not being 'the real thing,' and nothing like the same accuracy can be obtained."

It was my privilege to serve from 1899–1904 as sergeant and colour-sergeant of the Durham University Company, 3rd V.B.N.F. During those five years great attention was paid to Morris-tube shooting by the officers of the battalion, and as a consequence I spent many hours weekly coaching men for the many league and other competitions promoted.

When I decided to form a rifle club at the Sheffield Pupil-Teachers' Centre I naturally wished to use the Morris tube, but after careful consideration I was forced to choose some other weapon, because of two reasons. In the first place, the expense was too great; and, in the second place, I could not secure ground for a range near the Centre. Our playing-fields are three miles from the Centre, and to be able to shoot there only would mean that rifle shooting would interfere with games. The only place available for regular practice was the Centre gymnasium, and it was impossible to place proper butts there.

When visiting the Dronfield Grammar School in February last, the headmaster, Mr. C. Baggaley, showed me an air rifle manufactured by the B.S.A., and I at once decided to adopt it for use at the Sheffield Centre. It is a serviceable weapon, is 43in. in length and weighs 7lb. It is supplied with either pistol grip or straight hand stock at a cost of £2 5s. and £2 10s. I have tested the rifle very thoroughly, and have no hesitation in saying that up to 25 yards (I have not tested it at greater distances, though it is guaranteed up to 50 yards) it is quite as accurate as any rifle can be.

Though an iron target (described below) is generally used, I purchased some N.R.A. miniature targets (1in. bull) yesterday and used them at practice last night and to-day. Every lad who attended was allowed one sighting shot and seven shots at 12½ yards. Eighteen targets have been used (five lads used two targets each), and the following scores were made (h.p. 35):—

One 34, two 29, three 28, two 27, three 26, one 25, one 24, five 23.

I do not think the Morris tube would have been more accurate.

With regard to the want of "realness" which Mr. Stuart alleges exists when using an air rifle, I can only say that I myself enjoy using the air gun quite as much as I did the Morris tube, and three of my lads who have had some experience with Morris tubes, think the B.S.A. air rifle a much more satisfactory weapon. In the matter of recoil, the movement of the piston produces a much more appreciable jar than is experienced when using Morris tube cartridges.

Some great advantages the air rifle has over miniature cartridge rifles are:—no elaborate butts are necessary; when used indoors there are no unpleasant fumes; the annual cost is trifling; practically no time is required to keep the rifle in good order. A Morris tube, to be of any use, requires a great deal of attention.

A description of the targets used will probably be of interest and use to your readers. The targets are made of ⅛in. steel plate. A ½in. hole is drilled through the centre to serve as a spot to aim at, and concentric circular grooves ½in. wide and deep mark the position of the bull, &c. The target is screwed to a light wooden frame (⅞in. white wood), and a bell is fixed behind the hole in the target. The target is painted white, and after every few rounds a few strokes with the paint-brush give a new target. A sixteen-candle power electric lamp protected by a steel shield, serves to illuminate the target when necessary. The total cost of the target, &c., was but a few shillings. It is light, can be moved about to any position, and is indestructible. Of course, when using paper targets, it is possible greatly to improve a lad's shooting by keeping and comparing his targets, but the same advantage may be obtained when using such targets as the one I have described by carefully recording the scores made and noting the individual peculiarities of each lad.

In concluding, I would suggest to those interested in shooting, that, in addition to teaching the prone and kneeling positions, instruction be given in the sitting position.

H. W. COUSINS.

Pupil-Teachers' College, Sheffield.

Solubility Curves—A School Laboratory Experiment.

SOLUBILITY curves are generally represented to us as obtained by a series of experiments, each experiment involving prolonged agitation at a constant temperature and subsequent evaporation to dryness. The time required will generally put these processes beyond the reach of a school laboratory lesson, lasting at most for an hour and a half.

We have endeavoured to find an alternative method, in which a known weight of substance is dissolved in a known volume of water, and then the *temperature* at which it can just be held in solution is determined by alternately heating and cooling the liquid, as in the determination of the freezing-point of paraffin wax.

To take an instance, 50 grams of nitre were dissolved in 100 c.c. (not grams) of water by C. Gray.

Dissolved at 46½°, 42°, 39°·2, 35°, 34°·5, 33°·8 C.,
Crystallised at 30°, 33°, 33°·2, 33°·2, 33°·5, 33°·5 C.,

i.e. just saturated between 33°·5 and 33°·8 C. Then successive quantities of 10 c.c. of water were added to the solution, and the saturation temperature found after each addition, giving results:—

50 grams in 100 c.c. (=50 grams in 100 c.c.) at 33°·7
,, ,, 110 ,, (=45·4 ,, ,,) ,, 30°
,, ,, 120 ,, (=41·6 ,, ,,) ,, 27°·5
,, ,, 130 ,, (=38·4 ,, ,,) ,, 25°·5

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These results, when plotted, are in close agreement with the solubilities given in the books, differing from them by less than 1° C.

It is not suggested that this method will prove as useful for research as it is for illustration.

Our experiments have only been made with ammonium chloride and potassium nitrate. Other substances may present greater difficulties due to supersaturation; but the addition of negligibly small amounts of the solid will sometimes bring the thermometer reading up with a jerk to the required temperature. HUGH RICHARDSON.

Bootham School, York, March 27th.

National League of Workers with Boys.

WILL you allow us to direct the attention of your readers to the recent foundation of the National League of Workers with Boys? The president of the League is the Bishop of Hereford, and the vice-presidents include Canon Barnett, Mr. George Cadbury, Prof. M. E. Sadler, and the Dean of Durham.

The League is founded with the object of linking together all who are working with boys, or whose influence reaches them—the teacher, the lads' club worker, the member of education authority, the employer, the civic worker, the religious worker, and, above all, the parent; and by conference, publications, and the usual methods of an efficiently organised society, to bring before them the best knowledge of the many problems they are grappling with, and the most helpful and scientific methods of work. The League will enter into no rivalry with existing societies. It will try to help to a better mutual understanding, to the end that each form of work may develop its own leadership, methods, and results to the fullest extent.

In the matter of the specialised study of work with the young, we in this country are behind America, where the Clark University is an example of world-wide fame, as, too, of world-wide influence, and where a General Alliance of Workers with Boys has been doing most valuable work for many years. The latter society has kindly promised its co-operation in furthering the objects of the League.

The methods of work which the League is adopting may be briefly summarised as follows:—

(1) The foundation of a national centre of communication between all workers and boys.

(2) An annual congress of members for the reading and discussion of papers. The congress will meet in different towns.

(3) The publication of the proceedings of the League and of other works.

(4) The foundation of a library, one section of which will contain, so far as it is possible to collect them, complete reports of work of all kinds with boys at home and abroad.

The library will be arranged for loan, and will be available for the most distant members of the League.

(5) The League will acquire, as early as possible, permanent bases for summer camps in the country and at the sea-side.

(6) The League will seek to give expert information and advice on any question relating to work with boys which may be referred to it, and to promote such schemes of work as may from time to time be shown to be necessary.

We shall be glad if any who are interested in the objects of the League will communicate with the Honorary Secretary, Mr. J. H. Whitehouse, at Toynbee Hall, E.

CHAS. E. B. RUSSELL.
J. H. WHITEHOUSE.

Sir Edwin Cornwall on the Rôle of the City.

THE compiler of your interesting notes on "History and Current Events" apparently questions the importance of "the *rôle* of the city" "in the past history of the world." I venture to think that, as an historian, he is likely to find himself in a minority of one, and his attitude will certainly astound our classical friends. If "Hellas knew no empire" (I see he apparently rules out Alexander the Great), its spiritual hegemony has, along with that of Judaism and Christianity, been the greatest factor in the world's progress. If, however, your contributor measures the importance of cities by the number of square miles of territory they possessed, I would merely instance Rome, the *cité antique par excellence*, the empire of which, as long as it lasted, was the most potent factor in the ancient world for the preservation of "law and order—commonly called peace." I thought every schoolboy had heard of the Pax Romana.

Surely, from the point of view of progress, practically the only lasting effects of ancient empires have been, apart from the religious influences, those of the city. I should have thought that a moment's reflection on the derivation of the word *civilisation* would have saved your contributor from his amazing assumptions. Apologising for troubling your readers with these truisms,

A LOVER OF HISTORICAL TRUTH.

THE doubt as to the importance of the *rôle* of the city in the past history of the world is not so "apparent" to me in the note as to "A Lover of Historical Truth." Were it not that one's own thoughts, especially when expressed briefly, do not appear the same to others as to oneself, I should be inclined to retort the charge of "amazing assumptions" on my critic. My intention was merely to direct attention to two systems of city government, that of "free Hellas" and that of the mediæval Hansa, as perhaps the most important illustrations of city rule in European history. In these notes I refrain as much as possible from any statement of individual opinion, and especially from depreciation. So far as generalisations are possible in history, and so far as one person can agree with the generalisations of another, I quite agree with the statements of your correspondent.

THE WRITER OF THE NOTE.

Production of Artificial Speech Sounds.

MR. RIPPMANN in your April issue speaks disparagingly of the phonograph records of Mrs. Frazer's series. We have used them in this school, and find them to be satisfactory for their purpose.

Of course, no such records are as musical as the human voice can be. Nor does their value to the teacher vary directly with this quality. Mr. Rippmann shows in his paper some misunderstanding on this head.

Perse School, Cambridge. W. H. D. ROUSE.

The School World.

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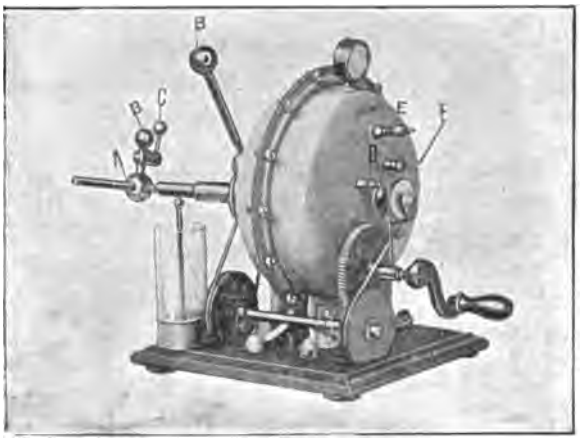
To face last matter

THE

TUDSBURY PNEUMATIC INFLUENCE ELECTRIC MACHINE.



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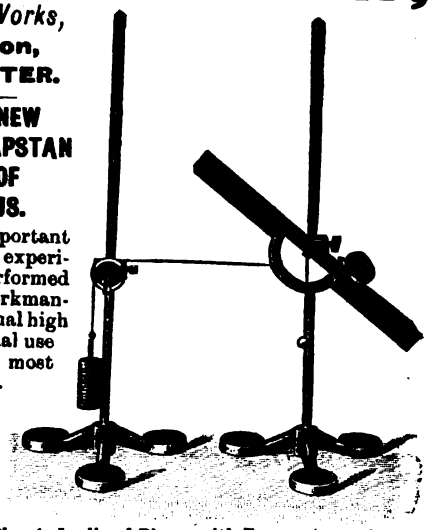

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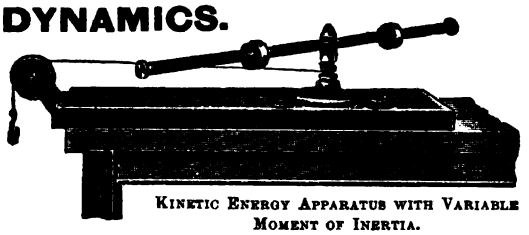

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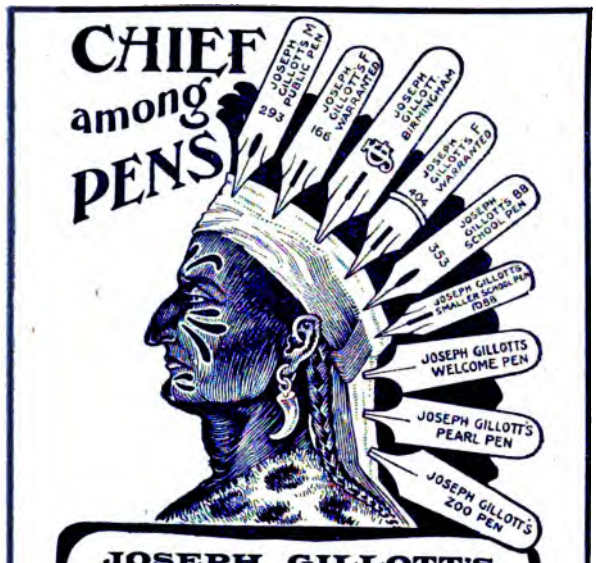
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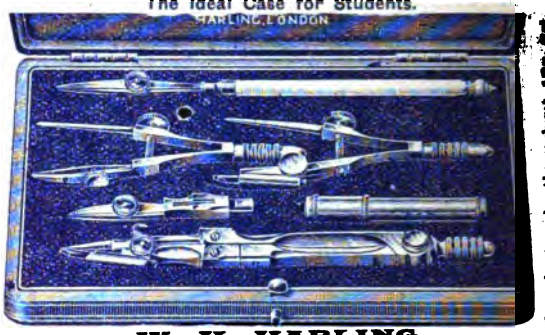

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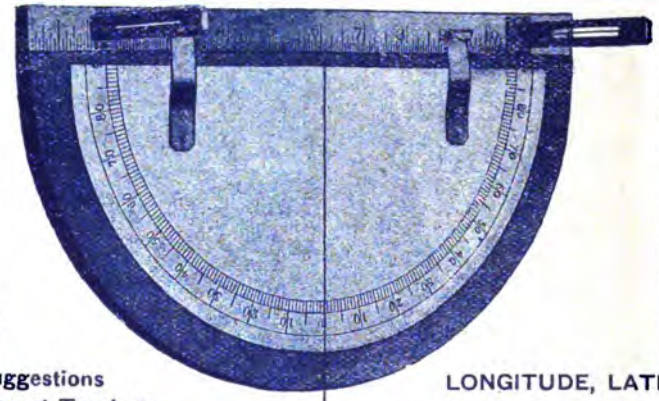

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To face first matter

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The School World

A Monthly Magazine of Educational Work and Progress.

No. 90. JUNE, 1906. SIXPENCE.

THE TEACHING OF EXPERIMENTAL ARITHMETIC.

By C. GODFREY, M.A.
Headmaster of the Royal Naval College, Osborne.

THE aims of experimental arithmetic are: (1) stimulus, (2) understanding. The aim of the old-fashioned arithmetic was facility and accuracy of execution.

Probably this antithesis is imperfect; much of the old-style teaching had no aim at all. However, the above statement will do very well for a beginning. I suppose that the pendulum will continue to swing between these two extremes to the end of the chapter. The point I wish to suggest at present is this, that we shall provoke reaction if we lose sight of a danger that lurks in the new methods. Strenuous practice in straightforward computation must accompany experimental work if the results are to be other than disappointing.

Another proviso is, let the experiments be simple. If there are experimental complications, boys cannot see the wood for the trees. For instance, many of the attempts to illustrate vulgar fractions with squared paper lead to long-winded explanations from the teacher and confusion for the taught.

Experiments without accompanying lecture work produce no lasting effects. Needless to say, the lecture must be of the Socratic variety; and opinions may differ as to which should come first, lecture or experiment. If the experiments are as simple as they should be, I think the lecture may follow.

After all these warnings and reservations, it may perhaps be doubted whether experiment is advocated at all. I may say, then, that I believe firmly in the educational value of experimental work in connection with arithmetic.

The trouble is to decide where arithmetic ends and physics begins. Many people advocate the fusion of mathematics and physics. But, in practice, most schools will find it necessary to draw a line somewhere. The mathematical teacher is perfecting a machinery for the investigation of physical facts; the physics teacher is using the said machinery. Perhaps this distinction (doubtless it can be upset) will provide us with a means of drawing the line.

Before going further, it may be noticed that the mathematician certainly crosses the line when he deals with mechanics. In America this science is left to the teacher of physics. The British custom is that the physics master treats mechanics experimentally, and the mathematical master works problems of the Cambridge type. This tendency of mathematical mechanics to become lifeless and artificial is the inevitable result of the split; the only remedy is for the same master to deal with practice and theory. The physics master will certainly not be able to carry theory far enough for scholarship purposes; so we conclude that the mathematician must bear the whole burden, and very pleasant he will find it.

As the mathematician has been forced to cross the line at one point, there appears to be no logical reason why he should not cross at another. The second point at which trespass seems defensible is hydrostatics. After all, mechanics applies to liquids as well as to solids; and the mechanics of gases, too, may reasonably be included, if we confine ourselves to Boyle's Law.

The mathematician, then, shall possess these regions, and the apparatus needed for exploring them; and the physicist shall retain the territories of heat, light, electricity, and magnetism. Further, it seems prudent to entrust to the physicist all experiments in which the details of manipulation are delicate or complicated; all experiments which are performed rather for their own sake than in order to reveal a principle.

I have wandered rather far from the original discussion of experimental arithmetic, but we cannot discuss the elements intelligibly unless we decide first of all what are to be the limits of experimental work in mathematics. At many schools there will be practical reasons which forbid the extension of mathematics that I have suggested. It will, however, be found, generally, that the physicist is very willing for the mathematician to relieve him of the work usually described as "physical measurement." This merges into experimental arithmetic, and I will now enumerate some of the experiments which are commonly found suitable.

I suppose that a good deal may be done in the kindergarten with counters, coins, and so forth, and I have no doubt that this should be done.

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But, as I have no experience of teaching children under twelve, I will assume that operations with integers and tables have already been mastered.

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Explain their meaning with strips of paper.

Use squared paper to prove that $\frac{3}{5} = \frac{21}{35}$ (a rectangle of 7 by 5).

Use strips of paper to show that $\frac{1}{4} \div 3 = \frac{1}{12}$.

DECIMAL NOTATION.

Measurement of Length.—As in geometry books.

Ratio of circumference to diameter of circle (rolling cylinder, cotton round cylinder, paper round cylinder).

Measure diameter of sphere, (i) with calipers, (ii) with blocks.

Measurement of Area.—By counting squares (as in geometry books).

Areas of faces of solids; of curved surface of cylinder; area of circle $= \pi r^2$

Measurement of Volume.—Build up rectangular blocks with cubic inches (or c.c.).

Prove principle that volume of solid of uniform section = area of section × height.

1 c.dm. = 1 litre = 1,000 c.c.

Volume by water displacement (graduated measuring-glass).

Measurement of Weight (in grams).—Practise weighing (ounce weight, coins, &c., &c.).

For further practice, find areas by weighing cardboard figures. Area of circle. Verify theorem of Pythagoras. Verify equivalence of triangles of equal base and height. Verify that areas of similar triangles vary as squares of bases.

1 c.c. of water weighs 1 gram.

Find densities of various substances by direct determination of weight and volume.

Measurement of volume by *weighing* water displaced.

As the subject of the present article is experimental arithmetic, it will be well to stop at this point; further developments, such as the principle of Archimedes, are better classed with hydrostatics, and are a step into much deeper water.

A good deal of the above work can be done in an ordinary class-room. But water and a balance cannot be treated respectfully outside a room fitted more or less specially for the purpose. For a class of twenty boys, it is found desirable to have five tables, 6 ft. × 3 ft. (about 3 ft. high), each with four drawers, and one tap and sink at the end. We also need stools, store cupboards, and a large sink with a draining-table for glasses. It is convenient to have a table for the master, and a blackboard. Gas is not necessary, but the possibilities of the room are increased if a supply is laid on to the tables. Lists of apparatus are given in many books on the subject.

One master can manage such a class comfortably. A bottle-washer (5s. a week) will be needed, unless the boys are allowed to help themselves to apparatus from the cupboards. But, to begin with, it is hardly safe to allow this. Difficulties of discipline do not occur; the interest is too great.

The master will have to decide whether the class is to be kept together, or whether each boy is to go at his own pace. The latter plan will get more work out of the class; it will be the function of the lecture to focus attention and point the moral of the experiments. On the "Go as you please" system, each boy must be provided with very definite printed instructions; otherwise the master's task will be an impossibility. However, there is no lack of books which cater for this demand.

Boys can work in pairs, and talking may be allowed safely (it must be confined to the matter in hand). At the outset there will doubtless be cases of petty looting (especially of mercury). A suitable "example" will generally put a stop to this; temporary banishment from the measurement room is a severe punishment.

Some course such as that outlined above is now compulsory for Army candidates, and experience shows that they may begin it quite young, perhaps as soon as they enter their public school. A good part of the work might be expected to seem rather babyish to an older boy, of fifteen, say. But, as a matter of fact, such boys take it very seriously.

Most mathematical masters will soon learn the dodges of the physical laboratory, or at least enough of them for this simple course. Generally speaking, the difficulty that has to be dodged is parallax.

As for the lecture which I have recommended as a desirable appendage, half of a mathematical lesson will be long enough. The class can then be asked why they hold their ruler this way rather than that; whether they read to the top of the mercury meniscus, or the bottom, or the middle; what is specific gravity, and how many c.c. of cold water weigh 1 gram.

To conclude, I can recommend experimental arithmetic as a refreshing change to any mathematical master who can come by the necessary funds.

SPELLING AND DICTATION.

By ARTHUR BURRELL, M.A.
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IT is a bold thing to try to say anything new on the subject of spelling and dictation, and the present writer does not pretend to do more than give a few practical suggestions. Perhaps, if we could assemble a class of sharp children before a committee of schoolmasters, every member of which was a personal friend, and was recognised as a personal friend of the children, we might get valuable lessons in the teaching of many subjects; for children will talk when they know they may talk, and will talk sensibly, too, if we will only listen. But only here and there do

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we get a schoolmaster who sees with the child's eye and comprehends with the child's mind, and forthwith the school and its lessons are under a magician's spell. We may assume, therefore, that the majority of schoolmasters are no magicians, and that children do not confide their difficulties to them. It is a sad thing to confess, but there is little use in shirking the fact. Our own difficulties in spelling we have forgotten; our pupils' difficulties we dimly guess at.

Of our spelling it is said that it bristles with difficulties, anomalies, and absurdities. Granted. But the fact remains that we do not find spelling difficult when we grow up. This is not because we spent too many laborious hours in acquiring it; it is simply due to the fact that we are always spelling. Persons who ride much in carriages find walking difficult; persons who use a bicycle twice a year find bicycling difficult; the man who does not read and write much finds spelling difficult. Good spelling in adult life is simply a matter of constant revision and constant practice.

We are further told that spelling acquired with difficulty is easily forgotten. So is Greek; so are analytical conics and shorthand; and the reply is similar to that given above. Spelling requires practice. Again, we hear that "educated" people make mistakes. It is true; and educated people write and read a good deal. Their mistakes are due to carelessness, to faulty visualisation, to a pride in bad spelling, to haste, and to neglect of devices for the spelling of particular words. As a matter of fact, these "educated" bad-spellers may be left out of consideration, if only for this, that most of them are either not educated or are non-observant. They could spell if they liked, but they don't care. Accomodate, ærated, sollicitor, embarass, seige, benefitted, are quite good enough for them.

It will be well if we clear the ground by one or two statements which, of course, have been made hundreds of times before, and the truth of which has again and again been questioned.

(1) Our difficulty in English is not one of spelling, but of pronunciation. As a general rule, pronunciation is the elder brother walking fast, and spelling is the little one toddling after him. People spoke and mauled their words before they wrote them, and then they tried to make spelling phonetic. The villager says he lives at Aptrick. You have to look in a map or consult a less simple villager before you find that his home is Appletreewick.

(2) Some children see well, hear well, write well, transcribe well, and consequently spell well; the schoolmaster scarcely needs to trouble them. He knows that a certain percentage of his class washes or is washed: he does not waste his time in looking at the hands of this group. The percentage may be small or large: it varies from term to term; but it may be disregarded. This *disregard of the child who needs no help* is one of the last lessons that we schoolmasters learn. Our tendency is to help on the strong, and thereby to weaken their powers.

(3) The definite writing out and learning of rules for English spelling may well be shelved. It is of little use to tell any intelligent being that the sound of *au* in "cause" is always represented by *au*, when he comes across in his next page paw, George, tall, thought, and caught. He dare not tell you your rule is no rule. Nor is it honest to tell children that nouns ending in *y* make their plural in *ies*; they are disturbed by "valleys," "buoys"; while if it be contended that the rule is generally true, still it is better to let anyone discover this by the instances he encounters. Even etymology is not always a safe guide: we cannot do more than rely on analogy. Only analogy explains such spellings as "father," "sovereign," "rhyme."

(4) Etymology can scarcely be added to the burdens the small boy has to bear; and a little etymology does not go far. The lists at the end of some books are, for children who do not learn Latin and Old English, useless; and word-building, which is put early in some syllabuses, should come at the close of the spelling-learning time. It belongs to strict definition, logic, and the syllabic divisions of words.

(5) Faulty enunciation by the teacher is answerable for a great deal of careless spelling in dictation lessons.

(6) In many schools no one system of spelling-teaching is followed throughout the school, and consequently there is no intelligent revision. Children are encouraged to forget wholesale.

(7) Mnemonics (and under this head I would certainly place analogy) are of the greatest possible use in calling to mind difficult spellings.

It seems from these statements, if they are true, that one system of spelling-teaching should be followed all through a school; that the learning of fixed rules should be avoided; that our chief care should be given to the most backward pupils; and that constant revision of work done is a *sine qua non*. The ground is now cleared for a scheme. It is universally admitted that spelling is a matter in which the eye plays as important a part as the memory; but it must be remembered that the eye deals chiefly with *printed* matter while the child is learning, and with *script* matter when the child is putting down what his memory dictates. These two alphabets are a source of confusion to the child which the teacher does not generally appreciate. Moreover, when a boy is asked to spell a word aloud, a third element of confusion arises, viz., the sound of his own voice. No problem of spelling is faced until the printed word, the written word, and the voiced word are all recognised. One instance will suffice:—Eye is one thing, *Eye* or *eye* is another, and I (the phonetic value) is a third. The shortest list of difficult words, *e.g.* ought, taught, George, shawl (all containing only one vowel), is not properly studied till the words can be by the child said, spelt aloud, written, and printed; for a child will learn to print very easily.

It would seem that in the early stages words should be arranged, not alphabetically, nor at

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haphazard, but according to their vowel (or, in the case of longer words, their predominant vowel). Indeed, what we have to do is to make for our classes a rhyme index of the words we come across (it being assumed that no child will ever be asked to spell any word which it has not heard, read, or seen in writing or in print). Thus, "I," being one of the first words a child meets, the "I" list in its early stage will contain some or all of the following:—I, why, fly, my, try; and only in a later stage should we find eye, lie, die, dye, dyed, tried, sigh, high, nigh. Similarly, in the early stage should be found from reading or hearing such words as now, sow, down, about, out; and only in later stages should a list like this be found:—enow, drought, loud, doubt. The consonants may be left to take care of themselves till we come to our lists of difficult words, for, in a spelling-lesson, "ough" in "thought" is the *vowel*, and "augh" in "caught" is the *vowel*.

The spelling-lists, then, will be made for the class as we go on reading and talking; they will be arranged phonetically, according to the vowel or the predominant vowel; they will consist of words known to all the class; and they will be subject to constant (*i.e.* periodical) revision, the printed, written, and said word being always demanded—from the weaker pupils. This spelling-revision is bound to take more time as we ascend the school. The list is in the teacher's possession. But this provides for vowel difficulties only. The reading will very soon bring the class face to face with consonantal difficulties. The word strife presents no difficulties; it would fall into the *i* group with life, wife, wipe, mine, height; but the word knife belongs to another category with the spelling-learner; it is much more of a pitfall than "bright" or even "height," and it is placed in a first list of difficult or catchy words. This list of catchy words is nothing like so long as our vowel list when we reach the middle classes, but it tends to become longer as the child's reading expands. The words parable, canon, cannon, salmon, lamb, family, paragraph, present no difficulties whatever for our first list (our rhyming-vowel list), but on our second list they must be, as they are full of consonantal traps.

I do not see that the teacher can arrange the consonantal list on any strict system. If he must adopt an arrangement, it should be phonetic, as in the first case, and "baron" would go with words in which *r* is the difficulty, and "paragraph" would be grouped with the *f* and *r* words. It is obvious that "canon" and "cannon" (*if they have both been met with in reading*) will be learnt together; but it is likely that "canon," not to speak of "cañon," will be left until the child is well up the school; though nowadays very often a small boy will be found spelling the three and spelling them correctly—canon, cannon, cañon—though two of the words are Greek to him.

With these two lists, made by the teacher and kept by the teacher—lists expanding as the child ascends the school, and subject to constant revision—the schoolmaster should be content. With such lists in existence, I believe that spelling homework might be dispensed with.

The right uses of dictation appear to be two—first, to familiarise children with good pieces of literature, and next, to give them material in which to exercise their knowledge of spelling and punctuation. With the former I do not deal, for it seems to be part of the work in literature. As regards the latter, surely the pieces to be dictated should be composed by the teacher himself, who knows, better than anyone else, the various pitfalls of his pupils. It is easy enough to concoct short pieces which shall bring in all the punctuation difficulties, and the words which have puzzled so many generations may well be dealt with in clever but seemingly innocent sentences. Here, and here chiefly, lies the value of the mnemonic: and anyone who is in doubt about the spelling of "harass" and "embarrass," "seize" and "siege," "apartment" and "appointment," "practice" and "practise," may easily invent for himself a mnemonic which will be useful to him all his life.

But I pity the schoolmaster who corrects exercises and dictations conscientiously, when he might save half his trouble by encouraging boys to ask questions. Ignorance of the true spelling of an unknown or semi-known word is no sin; and boys should not be encouraged to guess and write down wrongly, but to ask and write down rightly, the spelling of such words. *The mere writing down of an ill-spelt word tends to spoil spelling*; while the writing down of the same word correctly, even though the teacher has been asked for the spelling, aids the pupil to spell the word correctly on a later date, especially if every word asked for be underlined and re-written at the bottom of the page.

There remain two aids to spelling and punctuation—the transcription of printed passages and the transcription of handwriting. Of these little need be said, but every school and every class should be furnished with more or less difficult lithographed copies of handwriting. If these cannot be purchased they can easily be made; and it is not saying too much to affirm that many of our teachers would not be harmed by the compulsory copying of a few well-written letters.

To sum up briefly, spelling should grow with reading, should not be taught by vexatious rules, should not rest on philological knowledge; it should be threefold in character—oral, print, and script; it should be learnt by lists, vowel and consonantal; and prevention of bad spelling should be aimed at rather than the constant correction and underlining of words that are guessed at. It should be subject to a weekly revision from the lowest class to the highest, and the direct teaching of it should cease when the child has learnt to judge the new printed word as a jumper judges the width of a brook.

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HISTORY TEACHING IN JUNIOR FORMS.

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II.

THE usual form of the history lesson, viz., the narrative concerning the past, has been considered in a previous article;[1] particular attention was drawn therein to the necessity of securing the interested co-operation of the individual scholar, and various means of preserving his interested activity were suggested and briefly outlined.

But the teacher should not deal entirely with remote events. The juvenile impression that history is "something that happened long ago"—a kind of fairy-tale as distinguished from the story of everyday life—should be corrected by an occasional lesson based upon different lines and dealing with present facts. The boy must be led to see that history is being made at the present time, and that he himself is concerned in the making of it. At this age (8–10) this can best be effected by commencing with the story of the boy's own life, leading on through the incidents of his class to the history of his school and neighbourhood, the intention being that as he grows older he shall observe the reciprocal relation existing between members of the same community, and be preparing to exercise the duties of citizenship.

Again—and this applies especially to the early stages of teaching, where each lesson is more or less complete in itself—the idea of continuity, of progress and improvement, is apt to be obscured. The boys get their history in instalments; they endeavour to keep each narrative in its own separate compartment; they see a few isolated facts—one here, another there—and there appears to be nothing of importance between. This particular difficulty in teaching history to juniors is not evaded by confining attention to one short period and working that thoroughly. Very few of the considerations of cause and effect which appeal to adults and elder scholars in such a course can be appreciated by juniors; these grasp only the more striking facts of even a short syllabus, and couple them with those simple inadequate motives which most appeal to the child-mind. Moreover, a restricted syllabus tends to the neglect of that broad basis of elementary general notions which is the best foundation for learning intelligently. Attention was directed in the previous article to a method of using the map of the world as an aid to the right chronological sequence and continuity of events, but in order to convey to young children the idea of continuity and progress in thought and action, simple progress lessons should be given on lines connecting the present with the past.

Lastly, a period should sometimes be devoted to the especial object of strengthening the pupil's powers of observation and inference in connection with the dress, manners, and customs of previous periods.

THE MAKING OF HISTORY, OR THE PERSONAL LESSON.—At first we must be content with small beginnings on lines that *all* can attempt. Commence *viva voce* on the following model with several boys in succession:—

"My birthday is on . . . ."
"I am . . . . years old."
"I live in . . . .," &c.

Each boy called upon gives a complete sentence. Proceed to add fact to fact. "I have . . . . brothers," &c. Include games, previous school, and so on. Extend the plan, asking for three or four statements of a similar nature to the above from each of several boys, giving them wider liberty as to the nature of their facts, but insisting upon the right order as regards time. Encourage anything in the nature of additional information, as tending to individuality and freedom of expression. After one or two such experiments, the boys gain considerably in power, and one individual can be put up to tell his own life-story in short, distinct sentences. Make it plain that these personal facts are the basis of the boy's history. These facts are next to be reproduced by a listener, *viva voce*, the class being directed to note the variations and omissions. The reproduction is then compared with the original, and inquiry is turned towards the causes of discrepancy, in order that the class may gain elementary notions in the making of history with regard to such points as—

(*a*) the difficulty of reproducing all the facts;
(*b*) the likelihood of facts being exaggerated, or otherwise distorted, unless immediately fixed by writing;
(*c*) the differing accounts of the same historical fact, honestly given by different writers.

Further exercises in this direction should bear upon the doings in class, the story of the school, &c., and subsequently be turned to account in the composition lesson, care being taken that every boy has the opportunity of grasping the information by means of *viva voce* work. The attention of all should be often drawn to these two points: first, that they are making history—that is, recording known facts from the experience of one or more of the members of the class—and, secondly, that those present at the time and listening, differently understand and report them. Such written exercises should be collected and preserved until later in the year, and then distributed to the class and re-examined.

Talks illustrating the government of the school, the delegation of authority, the interdependence of the several members, the effect of the individual effort upon the work of the class, the need and, as far as possible, the reason for rules, and so forth, all tend to make the boy an intelligently responsible member of the school, and prepare him to apply this side of his experience in the larger arena of national life and history.

In the PROGRESS LESSON we connect the present with the past. The aim here is to show con-

[1] December, 1905.

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cisely and graphically the progressive steps by which mankind has advanced, to emphasise continuity of thought and action—points which are apt to be lost sight of in a series of more or less detached lessons. The steps in the progress lesson are taken in the reverse order of time, so that we may start from facts within the observation of the child, and also that the contrast between *then* and *now* may become more apparent, and be made the opportunity of emphasising the benefit conferred upon the community by the work of the individual. The amount of detail allowable at each step is a matter of some consideration, but since the aim is particularly to show continuity and well-marked progress, the ground to be covered should be mapped out previously, and the steps retraced in one lesson-period. The following steps will sufficiently intimate the style of lesson for a junior class. The children should recall the steps backwards and forwards at the end of the lesson.

Locomotion.—(*a*) Train—coach—horseback (pillion, &c.), walk; (*b*) motor—bicycle—hobby-horse—walk.

Illumination.—Electricity—gas—oil, fat (candle, &c.)——brand from wood fire.

Fire.—Matches—flint and steel—friction, &c.

Reading.—School-book—grandfather's book—horn-book—first printed book—manuscript—pictures.

Writing.—On paper, parchment, papyrus-leaves, wax, stone, &c.; with steel pen, quill (penknife), reed, stylus, chisel.

As an introduction to the lesson on manners and customs, a picture will be most useful. Select, as far as possible, a picture which tells its own story. When the class has looked well at it, remove it and ask what has been seen. In a first lesson expect short answers:—a man—a tree. "What did you notice first?" bright colours—large object. Replace the picture and ask questions upon it, and have the answers reproduced as statements by one or more boys. Later get the statements direct, without previous questioning, in the right order to form a story. Aim at getting reasons as well as facts. The observant boy may soon construct a tolerable narrative for himself, but all will be trained *to look for some meaning* in a picture. Use this information in the next composition exercise.

From this and the preceding article it will be gathered that the class use of the history-book usually considered suitable for boys of eight and nine is not advocated. Upon their first appearance books are eagerly welcomed and hurriedly scanned for the sake of their illustrations, but the subsequent lessons tend to suffer in freshness and definite interest. Let the teacher be the source of information in these early stages, where the personal factor counts for so much. At the end of this first course the child's mental powers will be stronger, and he will have had some experience in the use of his equipment; then a text-book, used under judicious direction, will confirm, modify, and enlarge in more formal language his previous knowledge.

A portfolio series of historical scenes, and illustrations of dress and customs, are of much more value than a supply of text-books for class use to the teacher of junior boys. Such illustrations can be exhibited each at the moment when the class is most likely to profit by the advantage, and there is still fresh stimulus in store for the later stages of the course.

The chief names and facts are put upon the blackboard as the lesson proceeds, in such a way as to form a summary for brief recapitulation at the close. Since young boys have some difficulty in remembering names, a group of three or four boys is made responsible for each new name mentioned. "Your new friend's name is . . . . "Make room in your desk for . . . ." This plan gives to the untrained memory a definite but simple task, and no boy is discouraged, but rather each follows with interest the fortune of the particular name entrusted to his keeping. Cases of exceptionally "bad" memory have given them early in the lesson some definite fact to remember, and are expected to reproduce it later.

The accompanying outline scheme is intended to be suggestive. Such a scheme should be drawn up by the individual class-teacher, and the details so adapted as to give personal interest to the course. Occasional lessons on the lines sketched above may be interspersed. The scale of treatment will depend upon the time available.

OUTLINE SCHEME OF HISTORY.

Round about the Great Sea.—(Map of Mediterranean and Nile, with narrow strips of colour on shore and banks, fading away to grey for unknown and unexplored regions.)

The first men compared with boys growing up in solitude—How do such account for their origin?—Men from stones, trees, &c.—How account for phenomena imperfectly understood—Whence comes river, wind, &c.—Movement of sun, &c.—Origin of wonderful tales. Describe first sight of sea—In the "middle of the E."—Supposed shape of earth. Earliest food—Drink—Method of locomotion. Where was the rest of the world?—Why this part called oldest—Touch on methods of preserving records—We write on paper for ordinary purposes, parchment for important purposes, stone (*cf.* grave-stone, foundation-stone, monument, &c.) for people yet unborn—Where have boys seen oldest record on stone? Thus prepare for

The Story of the Stone (Book).—(Previous map. Pictures of Egypt, Pyramid, Cleopatra's Needle, Sphinx, &c. Joseph before Pharaoh, &c.)

Recall above notes on records, &c. Lead on to some simple facts concerning ancient Egypt, and how we know them. The Nile overflow—The famine and Joseph—Egyptian belief concerning necessity for preserving body—Mummy—Embalmed (Midianites who carried down Joseph on old trade-route carrying spices)—Use of pyramid—How built—Touch on picture-writing and discoverers' difficulties—Rosetta stone. In elucidating picture-writing, *cf.* A was an Archer, B was a Butcher, &c. Moses in the ark of bulrushes (papyrus) on Nile—Israelites' journey from Egypt—Sinai—Jordan, &c., forcing original dwellers towards coast. In readiness for

The Earliest Sailors.—(Map as before. Pictures—Phœnicians trading with ancient Britons; British coracle; burnt-out log.)

Recapitulate, dwellers on coast—Mountains (Lebanon)

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behind—Why took to sea—Earliest known methods—Coast voyage—Why coast—King of Tyre and cedar for Solomon's Temple—Phœnicians—To Cyprus—Growing bolder. Why?—Skirting Great Sea—Carthage—Greece—Tarshish (Spain)—End of world. Beyond—Outside the gate (pillars of Hercules). Show sketch-map of known world, with guesses at beyond. (Pygmies—Everlasting ice, &c.) Notice shape of this map. Who will go out beyond?—Adventure to Gades (Cadiz)—To W. Africa—To Tin Islands—Use of all this—Tin, &c., for bronze (*cf.* penny)—Why not iron—Carrying information—Way to do things—Alphabet. The people most ready to *learn* and to use their knowledge. Prepare for

The Greeks and their Heroes.—(Map of Eastern Mediterranean. Photographs of temples, &c.—Acropolis, statuary—Plaster cast, copy of Grecian sculpture.)

The Argonauts—Some adventures of Ulysses—One or two of more prominent gods—Olympic games and laurel wreath—Distinguish gods from heroes—Direct attention to Greek boy's care for his body—Spartan boys—Love of beautiful—Thoroughness in work, &c. Why do we remember Greece to-day?—Direct attention to any classic architecture or ornament in neighbourhood. Recall Greeks, &c., and compare with

The Romans and their Heroes.—(Map of Italy, &c. Picture of Roman. Horatius, &c. Macaulay.)

Sons of the She-Wolf and Father Tiber—Relate story of Romulus and Remus. ? Truth—Story of Horatius or Coriolanus—Dwell strongly on Roman character, obedience, justice, &c.

The possibility of such men (Greeks and Romans) becoming masters of known world; such a man was ——— (alternatives, Alexander or Cæsar).

Alexander the Great.—(Map of Greece, Asia Minor, &c.)

Show where he lived—Give incidents to show character—His dream to unite east and west not yet accomplished—Why not?—Trace his journey—Ephesus—Tyre—Egypt—Alexandria. Trade with Athens, Carthage, Rome. Alexander's journey to India and death. Julius Cæsar. (Roman.)

The Mistress of the World.—(The power of Rome as illustrated by Julius Cæsar's journey through Gaul and the occupation of Britain. Map of Europe. Picture of Roman soldier—Eagle—Galley.)

Trace route generally—Rhine—Seine—How passed—Hostages explain—Landing on Britain (twice)—Story of standard-bearer—Across Thames—Back to Rome, leaving some Romans behind him—Jealousy at home (Pompey)—Death. General advantage of occupation to the Britons—Roads, bridges, baths, &c. Compare Cæsar, Kaiser, Czar.

King Arthur and the Round Table.

The Britons long for return of Romans—Why?—Some of their enemies—Angles—Saxons—Show whence—Britons gradually forced to west (Wales—foreign). As to outlook of Britons, their desire for helper leads to tales of one coming or already arrived, thus to the story of King Arthur—Knights' promise or vow—Round Table—Why?—The passing of Arthur—Excalibur—Mention Tennyson the poet.

Compare Welsh and English nowadays—Remark change of name. Angle-land—Alfred the Great as well known A.S. King.

The Men from the North.—(Map. Picture of Viking and ship.)

Compare with previous invasions—Whence came the Northmen—Trace on map—Called Vikings—Compare with pirates, but distinguish—Vik—Creek—*cf.* Ips*wich*, Nor*wich*, *Wick*, N. of Scotland—*Suther*land—Why—(Alfred and the Danes)—Further south to mainland—*Nor*mandy—Why. So lead to

The Normans in England.—(Map. Picture of Norman knight. Tournament, &c. Monk.)

Duke William's character—Make it typical of Norman attitude—Why *Duke*: *cf.* with *King*—His knights' manners, &c., language (*cf.* mutton, sheep, &c.)—Curfew—Why *cover* the fire—What Norman boys were taught (ride, shoot, &c.)—? Useless boys—Lead to monks, clerks, as compared with page, esquire, knight—Vows of knight—Search of adventure—Tournament, &c.—Adventures abroad—The Hospitallers at Malta—The old knight as monk, pilgrim, palmer, hermit. ? Extract from Scott's "Ivanhoe."

The Wars of the Cross.—(Map. Picture of Crusader, monk, Turk, Richard's coat of arms.)

The banding of knights together in search of adventure—Peter the Hermit—Richard the Lionheart. Trace journey to Holy Land—Mention there were several such, called Crusades. Mention Turks of to-day. Picture briefly Saladin, a worthy enemy, doing what he thought right. Explain "Mohammedan" sufficiently to show cause of fight—Koran—Return of knights—Richard's wreck and ransom—Disappointment and failure as Crusaders thought—But curious tales of countries and things seen stimulate others. Listeners incline to travel, not necessarily to fight—Leading up to real value of Crusades, *i.e.* information concerning other countries, travel and trade, &c. Show Venice midway between E. and W., and thus lead to

The Story of Venice.—(Map. Picture of canal, gondola, &c.)

Description of "her hundred isles"—The sea in the broad and narrow streets, &c.—Venetian ships to Crusades—The Doge—The marriage of the sea. The Venetian who wanted to know, *i.e.* Marco Polo, with Great Khan—Pekin, &c.—Accentuate fact that Chinese had been there *all the time*. Mention the "Merchant of Venice"—What would lead merchants and ships to leave Venice? and so on to

The Sea of Darkness.—(Map of Western Europe and part of Africa, and large expanse of sea to the west.)

Venetian ships go *via* Portuguese coast and Bay of Biscay to North Sea for trade—Why not some to S. after leaving Mediterranean?—Touch upon gradual extension of knowledge of W. coast of Africa by Portuguese.

Prince Henry of Portugal and his sailors. Madeira—Blanco, C. Verde—So far that "the North Star almost touched the sea"—What learn from this?

The New Way to India.—(Map showing Spain, Africa, India.)

The Cape of Storms—Vasco da Gama, little by little to India—Give description of difficulties, &c., and then India at last—Return laden with riches of East. How these had reached the West previously—What happened to Venice? How do we now reach India?

To the West.—(Sketch-map of known world without America.)

Sailing to the west you will come to China, India, &c.—Story of Columbus—West Indies—Spaniards to America—Account for name—Spain, the richest country in Europe—Magellan round the world. Pacific, &c. Show map of new discoveries and trace voyage.

Rise of England.—(Picture of Drake on Plymouth Hoe, &c. Perhaps verses on Drake by Newbolt, or the "Ballad of the *Revenge*.")

Spain commanded the land, because she commanded sea—Mention Holland and Spain, and danger to England—Need to defend coast, &c., need of good sailors, &c. Story

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of Elizabeth's sea-dogs. Drake harassing Spaniards—Round the world—Singeing the King of Spain's beard—The Invincible Fleet, and what happened to them. Frobisher's attempt to reach China by N. America. Sir Humphrey Gilbert takes men to live (colony) in Newfoundland. Sir Walter Raleigh to Virginia—Potatoes, tobacco.

In the New World.—(Map of world—Picture of North American Indian.)

Give outline of first colonists' likely experience in New England, *e.g.* Pilgrim Fathers—The North American Indian and his ways. English in other countries; and so on to

The English in India.—(Map of India. Picture of native princes, &c.)

Simple facts in connection with Robert Clive—Trace voyage in sailing-ship of many months—Clerk to East India Co., *i.e.* merchants who traded (how fairly) with natives—French also wishing to trade, and quarrels consequent. Clive hated office-work and longed to be soldier. The natives take sides—Example, Black Hole—French gradually retreat from country, and Clive *v.* natives. Clive's order against accepting natives' bribes—Native regiments—Sometimes threaten to disobey—Why? Did disobey some years after Clive's death. Mention one or two facts of Mutiny. Why can a few English far away from home govern India?—Bring in a few names of places, Calcutta, Bombay, Delhi, &c.

The Story of Canada.—Similarly as "India," with Wolfe, Quebec, French Canadians, &c.; or,

Captain Cook's Story, with special attention to the colonisation of New Zealand and Australia; or,

The Rise of the United States of America, recalling the original colonists, and then quarrels with England—"We must help to make the rules we have to keep"—Washington and the meaning of union. England's mistake—Mention long and troublesome war (perhaps a few prominent men) and final independence; or,

The History of the American Slave ("Uncle Tom's Cabin").

Some Recent Discovery and its Value.

Nansen—Captain Scott and *Discovery,* &c.

FRENCH GIRLS' SECONDARY SCHOOLS.

By WINIFRED A. TODHUNTER,
Gilchrist Travelling Student.

I.—THE INTERNAT.

LIFE in the *internat* of a French girl's lycée is very different from that of an English boarding-school. The lycée is not normally a boarding-school, but Camille Sée's law of 1880, creating State secondary day-schools for girls, added a proviso that boarding departments might be attached to the lycée at the demand of the township and at their own financial risk. Of this permission the townships have largely availed themselves, and nearly all French lycées have now an *internat*, the most important exceptions, as regards the girls' schools, being Paris and Lyons.

The difficulties of such large *internats*, as exemplified in the convent schools, had been already pointed out by many educational critics, yet they continue to flourish. In some cases it is a lack of lycées in the smaller country towns which leaves the parent no alternative; but it is more often the cheapness of the *internat* which appeals to the frugal parent, who sacrifices so much for the future *dot* of his daughter.

The *internat* generally occupies a wing of the main lycée-building. Versailles is the only lycée with an *internat* on the English model, with three houses situated in different quarters of the town. The girls sleep in white-curtained cubicles in long dormitories. One *répétitrice* sleeps in each dormitory, but the *directrice* and the *économe* have each their own suite of rooms. The building also comprises a refectory, study for preparing lessons, and a *salon* provided with piano and games. At Grenoble the lycée is a rambling old monastic building with plenty of free rooms, so that the girls rejoice in a dancing-room fitted with a stage. The more modern lycée-buildings (of which the Lycée Molière at Paris is an excellent example) are built round a "quad," which is the recreation ground. These courts, which are planted with trees and shrubs and provided with seats, are pleasant strolling-grounds, but are not, of course, suitable for organised games.

As regards internal organisation, there is something strikingly conventual about it, in spite of the fact that the lycées were started in opposition to the convent schools. A boarding department of seventy pupils in one building hardly admits of that elasticity of organisation which is so important in a girls' boarding-school. Working-hours are long for the boarders. Besides the five hours' work in school, the girls study for one hour before breakfast (from 6.30 to 7.30 a.m.) and for two to three hours in the evening.

Considering that the French girls play no games and spend their free time sitting in the school court reading or sewing—considering, too, that they are *always* under supervision—it is not surprising that so many French girls suffer from "nerves." For exercise on Thursdays and Sundays (which are holidays) there is a two hours' "crocodile" walk, and this (except for such fortunate girls as have friends living near who will fetch them on these days) is the only glimpse of the "world outside" that the boarders get. Hobbies are not apparently encouraged, possibly on account of difficulties of discipline. During some months' stay in two different *internats* I came across only two girls with genuine hobbies. They take kindly to the needlework and cutting-out taught in school hours, and are clever enough to endow even the black, long-sleeved pinafore, which is the school uniform, with the fit and finish of which the Frenchwoman is past-mistress. Other hand-work is conspicuous by its absence. In this and all else the French schoolgirl keeps to the beaten track, and does not attempt the interesting wood- or enamel-work by which many a Norwegian girl beautifies and furnishes her home. In the *internat* the food is generally good and is so well cooked that the girls are well nourished on what might be thought a somewhat spare diet. The meals are taken at small oilcloth-covered tables in the refectory. At 7.30 a.m., before morning school, there is a large cup of chocolate

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and a roll; at 11.30 a.m. *déjeuner*, a meat and vegetable meal corresponding to our English mid-day dinner; at 4.30 p.m. there is *goûter*, consisting of a large chunk of bread and a bar of chocolate, or, in summer, a handful of strawberries. It is an amusing sight to see the girls run for their *goûter*, which a maid brings into the school court in two large clothes-baskets. The last meal of the day, a light egg supper, is taken at 7.15 p.m., two hours before bed-time.

The girls themselves take no part in school government or organisation. The school is carried on by the huge army of officials—*directrice*, *économe*, *sous-économe*, *répétitrice*, &c.—without appeal to the pupils for co-operation. The girls are themselves *fonctionnaires* in embryo, and their part is one of passive acceptance. One rarely finds a club or other self-governing body even among the elder girls. The girls are never left without supervision out of school hours, and as the *répétitrice* is not invested with the same halo of respect as the *professeur*, but must enforce the rigid discipline, her lot is as little enviable as that of the *pion* in the boys' school. The school gives one the impression of a knowledge-market—a heterogeneous mass of students rather than a united social community. On the whole there is a failure of *esprit de corps* and a lack of a sense of responsibility in the elder girls. The want of time may be largely due to the fact that the teachers are absentees. In an English boarding-school the teachers are resident, sharing study and devoting all their time to the girls; but in the lycée the professor has nothing to do with school out of hours. The girls are brought to the class by a *répétitrice*, and after the lesson the teacher delivers the class back to her and goes. Thus the daily intercourse with cultured people, which the English parent expects in sending a boy or girl to Harrow or Cheltenham, is lacking in the lycée. A softening and humanising influence may be exercised by the *directrice*, but as a rule she is far too busy, engrossed in fulfilling the requirements of a highly centralised red-tape organisation, to give time to social intercourse with the girls. The *répétitrices*, though persons of culture, lack the prestige necessary to make their influence felt.

Intellectually, the French girls excel. No one who has taught them can deny their mental acuteness. Could certain moral qualities be developed in the French lycée pupil by such means as games, clubs, and self-government, her intellectual versatility would make her more than a match for the English high-school girl.

II.—The Externat.

Though the French *internat laisse beaucoup désirer*, the *externat* is in many respects superior to the high school. The fact that "Die Kindheit von Heute ist die Menschheit von Morgen" is nearer realisation in the girls' than in the boys' schools. The French girls' *externat*, supplemented by the home, often creates that "many-sided interest" in things intellectual which is characteristic of the woman of culture. The intellectual activity of the French sixth-form girl is illustrated by her conversation. At home we have perhaps been somewhat too zealous in "breaking up our knowledge idols," and there is a danger that even our girls may be unable to show enthusiasm for anything beyond the interests of the club, the magazine, and the hockey field. The intelligent lycée girl, on the other hand, is really interested in, and can talk intelligently on, literature, art, and politics.

To deal with externals first, the buildings, which are for the most part quite modern (the first girls' lycée, at Rouen, was opened in 1881), are excellent. The girls' lycée at Lyons, which is considered the finest in France, is quite a palatial building on an excellent site in the middle of the town. Broad corridors lead from the fine entrance-hall to spacious class-rooms, well lighted from the left, with plenty of blackboard space and modern desks. The heating is by *calorifères*, for the "hòmely" English fires, by which the teacher and front row are roasted while the back row is frozen, are not tolerated in French schools. The ventilation is by shafts opening into the main corridor, and during the five minutes' break between lessons windows and doors are thrown wide open. There is generally no large assembly room (other than the gymnasium), for there are, of course, no "prayers" to begin the school day. The lycée of Versailles has an excellent study for the sixth form, and there are in all lycées fine science laboratories and a studio. One is surprised to find the schools of the artistic French somewhat barrack-like and bare of ornament, but the schools are too young to have accumulated many treasures. Nor is the need for school decoration so great in France, where even the smaller towns boast a picture gallery, a cathedral, and a *jardin botanique*. The teaching staff consists of both men and women, but women largely predominate. For those who will face the barrier of examinations at the entry to the professions in France there are substantial compensations, especially appealing to the teacher, in the matter of prestige, security of tenure, and opportunity for further study. The French *professeurs* (as the teachers are called) have much the same prestige as an English university don, and just as the modern Oxford don withdraws to his *amoena deverticula* in the Woodstock Road after lecture, so the French teacher leaves his cares behind at the class-room door when the clock strikes the hour. He (or she) has no duties beyond the actual class-teaching and the correction of work done. For the women teachers, though the pay is not high, there are provided a pension and a *dot*. The cost of training is practically *nil*, for a girl of seventeen or eighteen who has passed the entrance examination to Sèvres (the training college for secondary women teachers) is *ipso facto* started in the profession. The State trains her for three years free of charge, and on completion of the

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training course she is at once given work in a State school. Many of the women teachers are married, and the children of teachers are educated free of charge by the State, so that a clever daughter of a *professeur* can qualify as a teacher with practically no outlay. Of course, there is the corresponding disadvantage of the highly bureaucratic organisation of education in France, which leaves the teachers, as civil servants, very little scope for initiative.

Government syllabuses give directions as to what shall be taught and how it shall be taught, and there is a staff of government inspectors to visit the schools. Still, the advantages offered to teachers are considered so great that there is very keen competition for entrance to the college at Sèvres, and the syllabus for the examination is now so heavy as to put a premium on the pupil who is an adept at *chauffage*.

As regards the curriculum, the French theory is that *modern* culture should be the keynote of the girls' school curriculum. Thus, though the curriculum is comprehensive enough to have pleased the Encyclopædists, there is no Latin and Greek. The syllabus includes French, at least one foreign language, ancient and modern literature (the former in translation), geography, cosmography, history (general and national), arithmetic, geometry, chemistry, physics, natural history, hygiene, drawing, music, gymnastics, needlework, elements of law (*droit usuel*), and *morale*. Of these subjects the last two are unknown in English schools. "Law" is only read for one year (age sixteen), and aims at giving the girls a general idea of legal matters especially as they affect women in regard to labour, marriage, &c. *Morale* is especially interesting to us just now in view of the decision of several of the education committees to adopt it for country schools. The animosity of the Church to the State in France has forced on the authorities this somewhat extreme solution of the "religious instruction" difficulty. As the law now stands there is no religious instruction in the State schools during school hours. *Morale* is taught in the girls' schools from the age of fourteen onward; in the first year there are discussions of such subjects as the family, the fatherland, society, &c.; the following year lectures are given on the great philosophers, and extracts are read from translations of Plato, Aristotle, Epictetus, and from Montaigne, Pascal, Bossuet, and Kant. A year's study of psychology in its bearing on education completes the course. This teaching of *morale* is difficult for the professor, as it is so closely hedged about; anything on political or polemico-religious ground is "out of bounds." The subject also demands a certain maturity of outlook in the teacher. Dr. Wychgram, a German critic, naïvely remarks that the teacher of the subject should have "some experience of life and a perfect knowledge of the human mind and the world." The subject is either taught by the *directrice* herself or by a man teacher.

In conclusion one word must be said of the success of the teaching of the mother tongue in these schools. In these days of the "open magazine" girls who do not read the best of their national literature during school days will probably never read it at all.

A recent writer [1] has brought some evidence to show that the modern English schoolgirl does not even read the best English fiction. But the girl who has been through the lycée course has read a considerable amount of French literature and has acquired a literary taste and power of expression which stand her in good stead in later life.

THE SCHOOL EDUCATION OF THE FUTURE ENGINEER.

IT has often been urged that progress in the development of sound educational practice is impossible in the absence of carefully planned experiments, followed by a conscientious recording of results and a painstaking examination of the data accumulated, with a view to discover principles of procedure for the future. Educational methods have been too often unintelligently based upon authority, whether that of successful schoolmasters or of popular writers on education. The spirit of inquiry which should inspire teachers has rarely influenced them, and, like other departments of national activity, schools have been content to "muddle through" somehow.

In the past, all this has been true to too great an extent, but there is gratifying reason to believe the younger generation of teachers has imbued the scientific spirit, and that there is a growing desire to test every educational formulary in the authorised scientific manner and to see how far it can be justified by results.

In view of this tendency, the report of the committee appointed by the Council of the Institution of Civil Engineers is heartily to be welcomed, for, in one department of secondary education at least, it maps out a line of conduct for the schoolmaster and formulates in clear language what one set of professional men thinks the secondary school ought to be expected to accomplish. The precisely worded recommendations of the committee, which have recently been circulated, provide definite instructions as to what successful and eminent engineers consider to be the essentials of secondary education, so far as boys intended for engineering are concerned. Boys possessed of the faculties and powers which have now been specified by experts are required. The specialists, moreover, have indicated the way in which, in their judgment, boys may be suitably endowed with these intellectual characteristics. In other words, schoolmasters have been provided with an excellent opportunity of showing how far they regard their work seriously and to what extent they are willing to carry out and record the results of skilfully arranged experiments.

[1] Miss F. B. Low, in the *Fortnightly Review* for February, 1905.

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It will interest our readers to learn the steps which led up to the recommendations of the committee. The Council of the Institution of Civil Engineers first appointed a committee to consider and report as to the best methods of training for all classes of engineers, including both scholastic and subsequent technical education. To make the committee quite representative of every department of engineering, gentlemen were afterwards added to the committee to represent every one of the great engineering associations. A prominent place in the subsequent inquiry was given to the question of the preparatory education of the future engineer in secondary schools.

A schedule of questions was issued to 120 representatives of (*a*) teachers in engineering colleges; (*b*) headmasters in secondary schools at which it was believed special attention was paid to scientific training; and (*c*) engineers not engaged in teaching. Replies were received from 80 per cent. of those whose opinions were invited; and from these replies definite conclusions were deduced as to the prevalent opinions on points raised by the questions.

The first question propounded was: What is the proper age for leaving school, having in view the fact that the boy has ahead of him a practical and theoretical training which will cover certainly four, probably five, and perhaps six years before he can become a regular assistant in any branch of engineering work?

Forty per cent. of the replies recommended seventeen years of age, though nearly 20 per cent. advised sixteen years of age.

Ninety per cent. of the authorities answering the committee's questions considered a leaving examination for secondary schools desirable, 54 per cent. thought such an examination should be in the hands of the school itself and of external examiners conjointly, and 94 per cent. said that this examination should be utilised as the equivalent of a matriculation examination.

The great majority of the referees thought it would be possible to develop further than has been the case hitherto the teaching of history and geography in what may be called their commercial aspects; that *précis*-writing could be included in the teaching of English subjects; and that extended instruction in essay-writing could be given.

The general opinion was that Greek should be omitted entirely from a secondary-school education, or be discontinued at an early age. A small majority thought that Latin should be studied to the end of the secondary-school course. Modern languages, it was generally thought, should be taught colloquially or in such fashion as to make them generally useful, without the expenditure of unnecessary time on theoretical grammatical exercises or in the study of classical comedies.

A large majority of the referees thought that general mathematical teaching could be given to boys who intend to become engineers in such a way as to help them later in the practical use of mathematics—such a method of teaching naturally differing much from the method which would be used if mathematics is to be merely an intellectual exercise, not actually employed later in real life, or even used for the sake of passing an examination.

The committee pointed out that in the great majority of cases the boys whose natural bent is towards engineering find the geometrical side of mathematics fairly easy, but have difficulties with the analytical side. It is considered desirable also that boys leaving school for engineering training should have more than the mere minimum represented by four books of Euclid, &c. They ought certainly to know something about logarithms and the elements of trigonometry, and also about similar figures.

It was generally considered desirable that the teaching of mathematics at school should be arranged with a view to attain the following objects:

(1) The practical use of arithmetic with the special object of obtaining correct results independently of the mere study of arithmetical methods.

(2) The encouragement of the use of contracted methods.

(3) The encouragement of exercises in mental arithmetic.

(4) The teaching, at this stage, of what Prof. Perry has called "practical mathematics," of the use of logarithms, of elementary trigonometry (limited, for example, to right-angled triangles), of the general ideas of projective geometry, including points and lines at infinity, and the use of the slide-rule.

(5) The elimination from instruction in mathematics of such matters as cube root extraction and elaborate algebraic equations, which are purely intellectual gymnastics without any direct usefulness.

It appeared from most replies rather that boys should be made superficially familiar with the general language and ideas of elementary physics and chemistry, than that they should be carried somewhat further in one particular section of such work.

It was also considered advisable to encourage the general study of what used to be known as "natural philosophy" as a subject of general mental training as well as of practical interest.

So far as drawing is concerned most of the experts sending replies thought that the future engineer should learn at school:

(*a*) Ordinary geometrical drawing with orthographic projection, including especially curve-drawing, both by co-ordinates and by purely projective methods.

(*b*) Freehand drawing from ordinary drawing-class models or from solids representing simple details of an engineering character.

(*c*) The drawing, in orthographic projection, of objects from actual measurement, a subject which has been called practical mensuration.

A consideration of the replies summarised in the foregoing paragraphs led the committee to make the following recommendations:

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Recommendations.

(1) It is desirable that a boy intended for the engineering profession should, before leaving school and commencing to specialise, have attained a standard of education equivalent to that required by the Institution's studentship examinations; and that he should not commence his special training until he is about seventeen years of age.

(2) A leaving examination for secondary schools, similar in character to those already existing in Scotland and in Wales, is desirable throughout the United Kingdom. It is desirable to have a standard such that it could be accepted by the Institution as equivalent to the studentship examination, and by the universities and colleges as equivalent to a matriculation examination.

(3) Advanced teaching of history and geography, with instruction and practice in essay-writing and in *précis*-writing, should be included in the ordinary school curriculum; and the instruction in English subjects should include at least an introduction to English literature.

(4) Greek should not be required, but an elementary knowledge of Latin is desirable. The study of Latin should, however, be discontinued during the last two years of attendance at school, or after the standard required for the leaving certificate has been attained. Modern languages, especially French and German, should be studied, and should be taught colloquially or in such a way as to give the pupils a practical knowledge of each language, sufficient to enable them to study its literature and to converse in it with some degree of facility.

(5) Instruction in mathematics should be given by methods differing considerably from those usually adopted in the teaching of this subject merely as an intellectual exercise. The geometrical side of mathematics should be fostered, and before they leave school boys should be conversant with the use of logarithms, and with at least the elements of trigonometry, including the solution of triangles. It is also of importance that instruction in practical arithmetic should be carried further than has been generally the case hitherto, with the object especially of encouraging the use of contracted methods and operations in mental arithmetic; and of encouraging also the expression of results with only such a degree of (numerical) precision as is consistent with the known degree of certainty of the data on which they are or may be supposed to be based.

(6) It is preferable that boys should attain at school a general knowledge of elementary physics and chemistry, or of what is sometimes called "natural philosophy," rather than that they should pursue in detail some particular department of science.

(7) Special attention should be given to drawing; the instruction should include ordinary geometrical drawing with orthographic projection, curve-drawing, freehand drawing, and practical mensuration.

(8) Work in the nature of handicraft, such as carpentry or turning, or elementary field-surveying, may be encouraged as a recreation but should not be required as a school exercise.

(9) It appears to be impossible, in the general curriculum of school work, to include advantageously time for instruction in such a subject as surveying, which has been suggested.

The committee then suggests that this scheme of preparatory education should be communicated officially to the Board of Education and widely circulated amongst those engaged in the conduct of secondary schools and engineering colleges, in order that future schemes of tuition of youths who contemplate entry into the engineering profession may be guided thereby.

The committee is of opinion that if this course is taken it will assist in overcoming one great difficulty now universally felt in institutions in which applied science is taught. At present a considerable proportion of students enter technical institutions ill-prepared, and at least one year has to be devoted to instruction which ought to be secured beforehand. Proper preparation is essential if students are to derive full benefit from special instruction in applied science.

As Francis Bacon long ago insisted, truth comes out of error much more rapidly than out of confusion, and as Huxley added, "Next to being right in this world, the best of all things is to be clearly and definitely wrong." The report of the Institution of Civil Engineers is valuable because it lays down a precise plan, from which certain results are expected to follow. It now remains for the schoolmaster to do his part; and, after he has subjected the proposals to the test of experiment and summarised his results, we shall know at least if the engineers have solved their problem, or if we must begin again in quite a different way.

THE POSITION OF ASSISTANT-MASTERS.

Revised Schemes for Endowed Schools.

Under the majority of the schemes which at present regulate endowed schools in England and Wales, a headmaster has "the sole power of appointing and may at pleasure dismiss all assistant-masters." The governors assign a sum for the maintenance of assistant-masters or the other current objects of the school, and the headmaster determines the allocation and division of this sum. The salaries are usually paid by separate cheques from the governors to each individual master.

It is obvious that such conditions of tenure as the above statement implies are only defensible on the assumption that the assistant-master is, and should be, a very minor official. It is uncertain whether he can be regarded as in any legal sense the servant of the governors; he is possibly, but not quite clearly, the servant of the headmaster. On the retirement of the latter, every member of the teaching staff may be told, as has happened

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more than once, that his term of office has ceased *ipso facto*.

The natural and just protest of the Assistant-Masters' Association against this state of affairs is now, we are happy to say, bearing fruit. Several schemes have been revised recently with the vital clause amended to "subject to the approval of the governors, the headmaster shall appoint, and may at pleasure dismiss, all assistant-masters." Another clause modifies the method of payment, and an entirely new one gives authority to the Board of Education to interpret the scheme. In these circumstances great importance attaches to the following pronouncement of the Board.

Copy.]

BOARD OF EDUCATION,
WHITEHALL, LONDON, S.W.
31*st March*, 1906.

Middlesex, Tottenham Grammar School.

SIR,

Referring to your letter of the 25th instant, I am directed to state that under the scheme which at present regulates this Foundation the Head Master has the sole power of appointing and dismissing the Assistant-Masters. Clause 10 of the proposed new scheme, while reserving for the Head Master the initiative in the appointment and dismissal of the staff, takes away from him the sole power of appointment and dismissal. The Assistant-Masters would hold office as the servants of the Governing Body and the Head Master would exercise his authority under the clause as the agent of the Governing Body. No appointment or dismissal of the Assistant-Masters could be effectively made without the definite authorisation of the Governing Body.

Inasmuch as dismissal to be effective would mean dismissal after consideration by the Governing Body, the further questions raised in your letter would not appear to arise.

I am, Sir,
Your obedient servant,
(Signed) W. N. BRUCE.

G. F. DANIELL, ESQ.,
Deputy Chairman of the
Middlesex Branch of the Assistant-Masters' Association.

The clear and full character of this construction of the scheme will be appreciated by all interested in improving the status of teachers, especially assistant-masters. It would afford absolute evidence to any judge of the intention of the Board in proposing the scheme, and there is at least a possibility that a county court judge would be bound to accept this statement and rule accordingly. If this view be correct, the claim of the A.M.A. that the assistant-masters in all public schools should hold office as servants of a public body will be fulfilled wherever the new clause is adopted. The reservation of the initiative for the headmaster is entirely in the spirit of the "concordat" of the I.A.H.M. and the A.M.A., and will doubtless conduce to efficiency. We are of opinion that the changes will increase true loyalty to the head in the common room. The improved status of the assistant-master will be a gain to the teaching profession, while its security will be increased by the imposition of moral and legal responsibility on the governors.

THE TEACHING OF MODEL-DRAWING.

A CRITICISM AND SOME SUGGESTIONS.

By E. M. CARTER,
Art Master, Whitgift School, Croydon.

THERE has been a tendency in recent years to neglect the teaching of model or object drawing in many schools, and, so far as one is able to observe, the tendency appears to be on the increase. The cults of ambidexterity, freearmedness, brushwork, nature-study, and so on, have apparently deposed the more old-fashioned but, from an educational point of view, more valuable branch of an art curriculum. It is possible that these subjects have a greater fascination for young pupils than model-drawing as generally taught, and the fact that the results of their study make a brave show on the walls at exhibition times, and are calculated to make a greater impression on parents, school managers, inspectors, and the uninitiated public generally, may account to a certain extent for their popularity and the consequent neglect of model-drawing.

That this should be the case is much to be deplored, especially when one considers the importance of the subject as the foundation of all drawing, apart from its inestimable value as a means of developing the power of observation.

It is surely as essential for a boy, whether destined to be artist, artisan, or merely an ordinary citizen, to be able to make a rapid and accurate drawing of a solid object, such as a piece of furniture or machinery or a building, as that he should be able to arrange a number of brush strokes in certain geometrical patterns or to make a drawing in microscopic detail of a bursting leaf-bud. In this article I propose to point out what I consider to be the weaknesses of some present systems of teaching, and to make a few suggestions whereby model-drawing may be made not only interesting and popular, but a most valuable means of cultivation of the hand and eye, and, incidentally, of the perception and love of the beautiful in form and colour. At the same time, even in its elementary stages, model-drawing may be made to afford a means of art expression and to give ample scope for individuality and originality in style and technique.

One of the most glaring defects in the majority of systems is that the subject is treated in too mechanical and stereotyped a manner, often with reference only to the set of geometrical models prescribed in the syllabus of the Board of Education—models which, though undoubtedly useful as illustrating principles of construction, are apt to have a stilting and soul-deadening influence when used lesson after lesson for an indefinite period. The chief factors which militate against the usefulness of the lesson in model-drawing are the premature introduction of the theory of perspective, the use of construction-lines, and the reliance placed on certain "rules" for model-drawing (*vide* the majority of text-books)—rules

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which are frequently applicable only to certain positions of the model.

Mr. E. R. Taylor, of Birmingham, in his well-known treatise published in 1885, made a spirited and emphatic protest against the introduction of perspective theory into the lesson in model-drawing; but that it is still extensively used is evident to anyone who has opportunities of observing. The following remarks, for instance, are embodied in a pamphlet of suggestions issued in 1900 by the Technical Education Board of the London County Council for the guidance of the teachers of art in secondary schools:—"The pupils should be made conscious of the existence of perspective. . . . The meaning of the horizontal, or eye, level should be explained. The teacher should show how objects below the eye and parallel to the ground vanish upwards and those above the eye vanish downwards. . . . A piece of white string might be placed across the room at the average eye-level to represent the horizon," &c.

I saw recently a teacher in an elementary school in the North of England giving an initial lesson in model-drawing on the lines suggested above. He commenced with a brief and fairly lucid summary of the principles of perspective, to which the class listened with a polite appearance of attention. He then proceeded to the "white string" business, whereat the boys brightened visibly, apparently in the vain hope that their teacher was going to do something with it, but sank quickly back into apathy on learning that this line was only the meeting-place for certain imaginary lines. All this time the actual model which the pupils were supposed to be studying was scarcely mentioned. In the end, after the class had listened for about twenty minutes, vainly striving to see these hypothetical lines and imaginary points, the teacher made a drawing on the blackboard, and the class copied it.

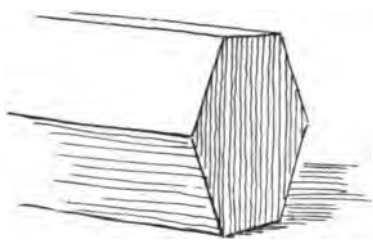

Fig. 1.

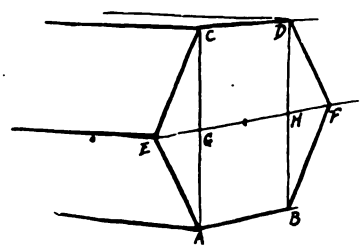

Fig. 2.

Fig. 3.

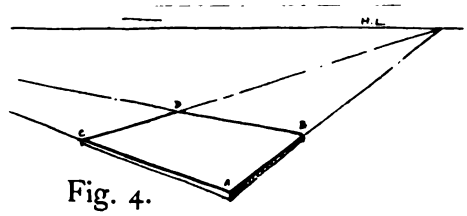

Fig. 4.

It is a remarkable fact that, while methods of teaching have advanced with such strides and in such rational directions in many branches of art-teaching, the model-drawing lesson still hobbles along on the antiquated crutches of *centre-line* and *cross-line* and a veritable scaffolding of imaginary horizontal and vertical lines, which effectually prevent the pupil from obtaining any intelligent idea of the form and beauty of the object he is drawing.

One may see the results of such teaching in the work of adult students who have been brought up on such a system, where often the application of a rule is allowed to override the evidence of the senses. One such student, in preparation for the South Kensington examination, was recently drawing a group which contained a hexagonal prism, the end of which presented an appearance as Fig. 1. The student's rendering was as Fig. 2, and, although she herself admitted that it did not *look* right, she was perfectly content because, as she said, she had "made A C and B D vertical and parallel, and A B, E F, and C D to converge, and E G and H F equal to half G H," and so forth, all in the approved style, and had complacently built up her drawing on this geometrical basis, utterly regardless of the shape and proportion of the mass.

On another occasion the model-group included a board, the appearance of which from the student's position was as Fig. 3; on his paper, however, he had got Fig. 4, and nothing short of cutting out the shape from his paper and holding it between his eye and the model would convince him that it was wrong, so secure was he in the knowledge that he had made A B and C D, &c., vanish to the same points in his horizontal line, and quite oblivious to the fact that, the position of the horizontal line on his paper being purely a matter of conjecture, there was a possibility of this line being placed too high or too low, with disastrous consequences to his drawing. In either of these cases, if the student had been trained to observe the *mass* of the shape instead of merely the *outline*, it is very unlikely that such mistakes would have been made; or, at any rate, they would have been immediately detected and remedied.

The very manner in which such a student approaches the drawing of an object is convincing evidence of the mechanical nature of the teaching. The pencil is first held more or less at arm's length between the eye and the model, and, with much facial contortion, a number of mathematical calculations are made respecting the different proportions of width and length. The student then proceeds to consider relative sizes of apparent

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angles made by receding lines with an imaginary horizontal or vertical line, sometimes with the aid of an ingenious device known as an "angle measurer." Then certain points are placed on the paper with geometrical precision, and finally—after much groping for vanishing-points, the positions of which are purely imaginary, often inaccessible, and generally impossible of verification—the various points are joined, and the drawing is complete. No doubt an accurate drawing may ultimately be made by such means, but as regards any benefit which should accrue to the student during the process, in the cultivation of observation and power of drawing, he would probably receive just as much if he were given a camera and allowed to snapshot the model.

A similarly arbitrary method obtains in the drawing of symmetrical objects, such as a vase. In nearly all cases the preliminary instruction is: "Draw a line down the middle." This is followed by various horizontal lines across the widest and narrowest parts of the vase, or, as I recently heard a teacher airily remark to his class, "Draw as many cross-lines as you like; the more the better." The outline of the object is then drawn through certain points on these lines; and the finished drawing, in the majority of instances, looks as though the object were made of wire, or cut out of a flat sheet of tin.

The defects of such a pernicious system of teaching are many and obvious. It tends to make the drawing a matter of *calculation* rather than of *observation*, and, by dealing exclusively with lines and points, it neglects entirely the mass and solidity of the object, and so fails to afford that training for the hand and eye, and, more important still, that cultivation of a feeling for form, which should be the true mission of the drawing-lesson. It is of no value as a training for advanced drawing, for landscape or architectural drawing, or for groups or objects containing such a variety of detail, varying in proportion and direction, as to make the application of these *rules* a practical impossibility. It entails considerable waste of time and effort in the drawing of these preliminary imaginary lines, and their subsequent rubbing out destroys the freshness and spontaneity of the drawing, and tends to grubbiness and untidiness. Another minor point I have observed, worthy, I think, of consideration, is, that pupils who have spent much time and loving care over the preliminary structural lines are naturally very loth to rub them out and undo all their work on discovering later that the drawing is wrong.

Now, as to a means of remedying the evils which I have indicated briefly as attendant on this system of teaching, I would, in the first place, abolish all construction-lines of whatsoever description, forbid, or at any rate discourage, the use of "thumb and pencil" or any other mechanical means of measurement, and refrain from any reference to the theory of perspective until the pupil had attained to some considerable skill in drawing, and then it should be used only as a means of *correction* or *corroboration*, and not as a help to the drawing. The real and ever-present difficulty which is the bugbear of both teacher and pupil in the initial lesson of the orthodox drawing course, *i.e.* the apparent convergence of the receding parallel sides of a board or cube, I would overcome by not beginning with a rectangular object at all; I would take the cylinder, placed on end, as the first solid. One great advantage of this is, that, in addition to doing away with the perspective difficulty, it permits of each student having a similar view of the model, to the obvious advantage of all concerned. It would be as well if it could be made a condition of admission to the model-drawing class that a pupil should be able to draw an ellipse quickly and accurately, in any position and of any proportion. The chief difficulty that besets the tyro is to estimate the roundness or proportion of the ellipse (I mean of course without measuring it), and when to this is added inaccuracy or slowness in the actual drawing, it forms a very serious bar to progress. I endeavour to anticipate this difficulty by providing that the ellipse, in great variety of size, position, and proportion, shall enter largely into the drawing-lesson for a term or two before a boy takes up model-drawing, insisting always that it shall be drawn freely and quickly, and without construction-lines.

I would suggest, as a prelude to the drawing of the cylinder, that a large plane circle of stout cardboard be cut out. This, held in a vertical plane, first "facing" the class and then "end-on," will demonstrate that the appearance in the first case is a circle and in the second a straight line. Now let the boys half-close their eyes, or more than half-close them, until the circle appears to them but a blur of light or colour; then, holding the circle between the hands, revolve it very slowly on its vertical axis and let the boys tell you what they observe. Now, if this were done with the boys' eyes wide open, the majority of them would simply observe that one side of the circle was advancing and the other receding, and would all the time be conscious that the thing was a circle, and would probably draw it as such. By observing the slowly-revolving circle with the eyes half-closed, the average boy will soon see that the straight line of the "end-on" view resolves itself into a narrow ellipse, which in turn becomes rounder and rounder until it is again a circle. The ellipse may then be held horizontally and the boys led to observe that the appearance of the ellipse goes through similar variations of *roundness* on the circle being raised or lowered. They should now attempt to draw the ellipse presented by the circle placed at various heights below the eye, the drawing to be done rapidly, without regard to quality of line, or finish, but solely with regard to shape and proportion. In no circumstances should the proportion be represented by the numerical ratio of width and length, but should be entirely a matter of judgment.

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If a boy's drawing is wrong he should be encouraged to find for himself where the mistake lies. Let him hold out his drawing at arm's length, so that he can see the model either just above or below or to the right or left of his paper, and can take in both his drawing and the model at the same glance (Fig. 5). If this is done with the eyes half-closed, to shut out unimportant detail, a moment's careful observation will enable a boy to detect any discrepancy between his drawing and the model, quite as readily as by the clumsy method of endeavouring to find out how many times the imaginary minor axis will go into the imaginary major axis, and with infinitely more advantage to himself. The drawing of horizontal circles leads naturally to the cylinder placed on end, stress being laid on the fact that the lower circle appears a *rounder* ellipse than the upper one, and insisting that it shall invariably be drawn in its entirety, as the practice of drawing only the part that is seen results in such drawings as A and B of Fig. 6. Common objects of cylindrical form may now be dealt with, such as jars, bottles, tubs, &c., again insisting that details such as the label on a jar or the bands round a barrel be always drawn first as complete ellipses, to ensure that the pupil realises the roundness and solidity of the model. We may now consider objects formed of a truncated cone, or similar shape, as a bucket, plant-pot, cup, basin, and so forth, giving exercise in the drawing of circles of varying diameters at different heights, observing that the ellipses vary in *roundness*, irrespective of the size of the circle, but according to their distance above or below the eye. These objects, used singly or in groups, afford material for an almost endless series of valuable lessons, full of variety and interest. The brilliant boys may find occupation in the drawing and elaboration of minor details such as hooks, handles, &c., or in shading the drawing in pencil, pen and ink, or sepia, while their less gifted brethren are struggling with "principles." When these principles have been thoroughly mastered, and the boys have developed some sense of proportion as between various parts of an object and between objects of different sizes, we may then proceed to the cube and rectangular objects.

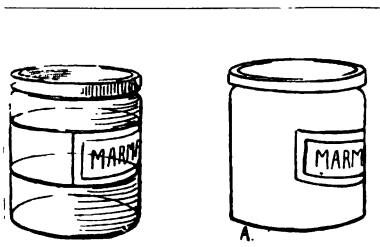
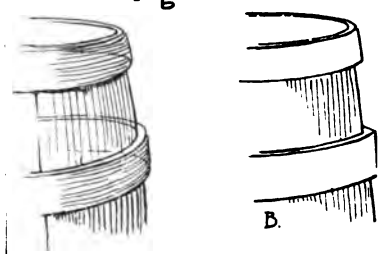


Fig. 6



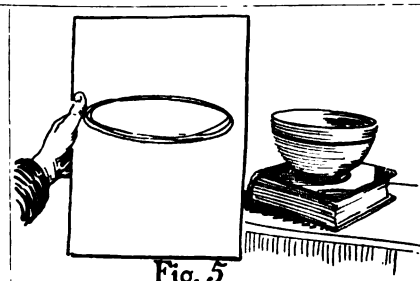


Fig. 5

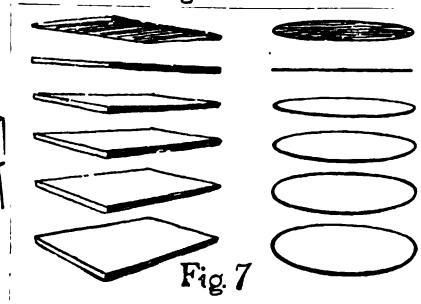


Fig. 7

Taking the rectangular drawing-board as an illustration, place three or four boards over each other (ordinary 3lb. glass marmalade jars form excellent supports, and give about the right distance between). Point out to the class, or, better still, let the class point out to the teacher, that the boards vary in apparent width from back to front as they ascend, as was the case with the circles (Fig. 7). Let them also observe that the outer corners of the upper boards appear to form more acute angles than those of the lower ones. The boys may now make a shot at the drawing of the boards, ignoring entirely details of perspective, but simply to ensure that each one realises the difference in the shape and proportion of the *mass* of each board; these may be emphasised by shading over the shape of each board in the drawing. Now take one board separately. Let each boy fix on his paper the limit of the two outer corners, not by fixing two points, but by indicating lightly and quickly two vertical lines, which, in case the model were a cube or box, would eventually form the two outer vertical edges; then, approximately, the position of the nearest middle corner, with regard to the two outer ones, judging distance by the eye alone. Let him now make an attempt at the two near edges, having first tried to realise their apparent slant by a moment's careful observation with half-closed eyes. Directly these front edges are drawn, let him hold out his drawing at full arm's length as before, so that he sees the model immediately under the paper. Assuming the drawing and the model to appear relatively as Fig. 8, it will at once be seen that the two edges in the drawing slope upwards too much, and that they will have to be brought down until they appear parallel to the corresponding edges of the model. In the same way the direction of the back edges, and finally the shape of the completed drawing, may be tested and, if necessary, corrected. It will be found that the *nearer* horizontal edge of a board appears to slant more than the corresponding *further* edge; in other words, they appear to run towards each other as they recede.

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It is at this stage that attention may be drawn to the perspective theory, when it may be used as a means of confirmation of what a boy has already observed, and not, as is usually the case, to enable him to draw without observation.

The process may now be repeated with boards of various sizes, and in vertical and inclined positions, then with rectangular solids such as books, boxes, chairs, stools, and so forth, and eventually with groups made up of rectangular solids combined with the cylindrical and conical objects previously studied, bearing in mind always that in no circumstances whatever should a mechanical measurement of either drawing or model be permitted, the work being tested in all its stages by frequent comparison with the model.

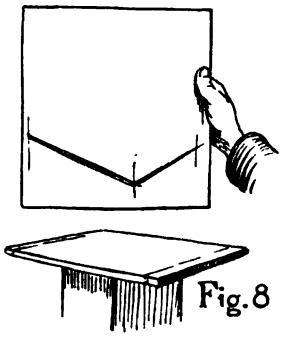

Fig. 8

It has not been possible within the limits of this article to give more than the merest suggestion of an outline of a scheme which, if properly developed and carried out by an earnest teacher who is imbued with a real desire to teach his pupils to *draw*, and not merely to pass examinations, would, I venture to think, be productive of much good. I do not claim that these suggestions form anything in the nature of a "royal road" or a "short cut" to drawing—rather the reverse, for it is a much longer and more difficult task to convince a boy that what he actually sees is often quite different from that which he *thinks* he sees, than to quote a cut-and-dried rule; but I think that, if conscientiously carried out, they would conduce to a broader and freer treatment of the whole subject, and should enable a student who has gone through such a course to undertake with confidence the drawing of any solid, from a can to a cathedral, and to draw it, not by the application of rules and theories or by a process of geometrical construction, but by a sensible appreciation of the masses of form presented to the eye, and of the contrasts of light and shade, tone, and colour.

A HISTORY OF ENGLISH POETRY.[1]

THIS book, to use the words of the preface, is intended "to describe the general movements of English poetry, as an art illustrating the evolution of national taste." It is not intended to give an exhaustive list of the individual poets, which is left for such books as Morley's. This explains why we have felt in reading it a certain incongruity in the biographical details which precede the account of each poet's work. Such things are dull at best, and we think nothing of the kind should be mentioned in the text but facts which bear directly on the poet's development, or on the history of poetic movements; all else is most properly relegated to footnotes. Mr. Courthope, however, has omitted to mention in his preface a very important feature of his work, namely, the connexion of poetry with politics and other influences social and philosophical. That there is a connexion between literature and politics has been taken for granted by almost all writers, but we are not sure that anyone has carefully examined all the facts so as to tell us exactly what that influence is. We are accustomed to speak of the extraordinary outburst in the sixteenth century as though it were a direct result of the defeat of the Armada; and yet this had been preparing, we do not say since Chaucer, but at least since the early days of Henry VIII. If religious intolerance and wrangling of sects produce first-rate literature, why was there not more of it at the end of the seventeenth century, and why have we so little prospect of it now? But these questions are too large for us to discuss; we only call attention to the fact that Mr. Courthope connects his literary and political movements in a most thorough-going way; not only so, but he actually applies the principle to individuals as well. He draws a "remarkable analogy" between the poetical career of Pope and the political career of Walpole (p. 183). He also takes account, though to a less degree, of the developments of prose, because *The Tatler* and *The Spectator* (for examples) aimed at a general reform of taste and manners.

Mr. Courthope's knowledge of these less-known byways of literature, we need hardly say, is full and accurate. It might be thought, perhaps, that the readers would be bored by a long procession of figures, most of them known to him only by name, or not at all, and some quite insignificant; but it is not so. True to his principles, the author presents the definite picture of those people to the mind by means of quotations from their works. He has more than a tolerant regard for these poetasters; he can pick out what is good verse, though it might not be supremely good, and he gives on occasion extracts to illustrate faults of taste, and so portray the downs as well as the ups of our literature. The author succeeds in holding a judicial balance when, as in the case of Pope, adoration has been succeeded by something like contempt. Although the book is not meant to be an anthology, a great number of the extracts give real pleasure. We may particularly mention a poem, once high in popular favour, now quite forgotten—Pomfret's "Choice." This charming picture of country life, and the quiet aspiration after intelligent ease, was well worth reprinting.

One other point we should like to mention. It is one which the author evidently takes for granted. But as he mentions it only by the way it seems as though he does not realise how foreign it is to modern practice, and also, we fear, to modern theory. In quoting a description by Prof.

[1] "A History of English Poetry." By W. J. Courthope. Vol. v.; xxvii.+464 pp. (Macmillan.) 10s. net.

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Butcher of the Attic style, the author applies this to Goldsmith in the following words:

"It is precisely the qualities thus admirably described which seem to me to make the ethical style of Goldsmith, both in prose and verse, looked at from this point of view, the most purely 'Attic' in English literature. He grounds himself on the spoken language of his country, and in *Retaliation* and other poems he shows a mastery over colloquial idiom as complete as that of Prior and Swift. But he adds to this, in his treatment of the heroic couplet, the 'touch of distinction,' learned from the literary practice of many generations of English poets from Drayton to Pope, of which I have so often spoken. If, in some of his antithetical turns, we are reminded, 'perhaps too forcibly, that this finely tempered instrument of language has been forged and sharpened in the rhetorical schools,' this only makes the resemblance between him and the Attic writers more complete."

We hold that this is absolutely true, and that no great literary style has ever existed which has not been founded on the colloquial idiom. They are not quite the same, of course, but, if the written style be such that it could not have been spoken, no matter how great the occasion might be, or how intense the emotion of the speaker, it is a false style. It follows that, if the colloquial is thoroughly vulgar or debased, and incapable of anything but vulgarity, there can be no literary style. It is the debasement of spoken English which now makes literary style so bad. We may hope this state of things is only temporary, but, for the time at least, there is no audience for what is good, and literature can be kept alive only by contact with life. The styles of Dante and Boccaccio were founded on the colloquial, which they refined and improved, no doubt; but their sources were sound and honest to begin with. The same is true of Shakespeare and his fellows, who wrote nothing which could not have been spoken. Indeed, all they wrote was spoken, and found an intelligent audience in the people of their own day. The same is true even of Milton, some of whose most elevated pieces of style may have been spoken, or were spoken, to an audience. But such a style as that of the Byzantine pedagogues, or of the modern Greek newspaper, or of the eighteenth-century pastoral, had no touch with life. These are all dead; the others live still.

We wish Mr. Courthope had thought of dealing with this topic, but, as he did not, we must say no more. As a critic, he needs no commendation; he has long since earned his spurs, and this book well maintains his high reputation.

Macaulay's Essay on Samuel Johnson. By N. L. Frazer. 75 pp. 8*d.*—*Marlowe's Doctor Faustus.* By J. Turner. 100 pp. 8*d.*—*Scott's Lay of the Last Minstrel.* By J. W. B. Adams. 128 pp. 1*s.* (Horace Marshall.)—These are three little volumes in the most agreeably presented series of "Carmelite Classics." We are glad to note their appearance in a more robust kind of binding than has hitherto been usual; but all the chief features of the edition are retained, and it will repay use.

THE HEALTHY SCHOOL.[1]

THE exhaustion of the first edition, published in 1902, and of a subsequent reprint, affords sufficient evidence of the value of this work and of the general appreciation with which it has been received. In the present edition some alteration and compression of the first part of the book, dealing with secondary schools, has permitted the insertion of a chapter which treats in useful detail of the important subject of protection against fire, and of a fuller consideration of training colleges, pupil-teachers' centres, cost of school buildings, and the like. The second part, concerned with elementary education and elementary schools, has been practically re-written. The portion dealing with educational authorities and their regulations has been brought thoroughly up to date, and includes the new rules just issued by the Board of Education for secondary schools, and the rules of the Scotch Education Department prepared in February of the present year, as well as the regulations, published in 1905, for elementary and higher elementary schools.

The planning of small and medium-sized country schools has received fuller consideration than was accorded to it in the first edition, and special chapters are now added upon infant schools, manual training and cooking centres, temporary school buildings, and the alteration and adaptation of old buildings for educational purposes. Another addition, not less interesting than useful, is a comparative survey of the systems of school planning on the Continent and in America, which is fully illustrated by a number of standard plans drawn to a uniform scale.

Although primarily arranged as an illustrated book of reference for the use of the school architect, the whole volume contains a mass of ordered information which makes it a work of reference invaluable to everyone interested in the practical aspect of the educational work of the country. No other publication with which we are acquainted covers so wide a field so well, or contains such a mine of practical information so carefully digested and so impartially presented to the consideration of the educationist. The chapters dealing with the hygiene of schools and that on the important subject of protection from fire might be studied with advantage by every householder and by every builder.

The ventilation of school buildings has been too often made the battle-ground of rival systems. Mr. Clay deals clearly and temperately with the subject, and shows that there is no one universal method of solving this difficult problem, equally applicable in all circumstances, or capable of being worked successfully in the absence of an intelligent comprehension of the nature and effects of the various factors which come into play under the widely differing conditions of modern life. In connection with ventilation, no mention is made of a simple expedient which is often of great

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[1] "Modern School Buildings, Elementary and Secondary." By Felix Clay. 556 pp., with 450 illustrations. Second edition, revised and enlarged. (Batsford.) 25*s.* net.

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value, especially when dealing with class-rooms and living-rooms of small or moderate size, heated by an open fireplace. The rapid flow of air up the chimney of such a room has to be supplied by the influx of a corresponding volume of air from outside the room. In colder weather, when the tendency is to keep most, frequently all, the natural inlets closed, chilly "draughts" are produced by the air entering at a relatively high speed through the crevices below and alongside doors, and from ill-fitting window-sashes. In proportion as these auxiliary inlets are closed, the draughts from the remaining ones become swifter and keener, or the chimney "smokes," because the fire, deprived of one of its necessaries of life, endeavours to draw the air it needs from the chimney shaft itself. In such cases, if a duct communicating directly or indirectly with the outside air be made to open at a convenient spot in the hearth, the fire will be adequately fed with the oxygen requisite for combustion, without lessening the "induced draught" into the chimney, which plays so important a part in securing the ventilation of the room. At the same time, the occupants are no longer subjected to the chilling floor draughts which are productive of directly harmful effects, especially in the case of the aged and the very young; and the other "draughts" are made less incisive in character. There is, consequently, a greater readiness to acquiesce in more or less opening of windows, &c., and ultimately a general gain in atmospheric purity and in health. The only loss suffered is that of a portion of the cold stratum of air which previously hurried to the fireplace below knee-level, and, as this is never available for respiratory purposes by human beings in an ordinary posture, it calls for no regret. The plan is occasionally seen in operation in the living-rooms of private houses—often originally adopted as a cure for the previously inveterately smoking chimney—and it is an expedient of real value when older existing buildings have to be adapted to use for scholastic purposes—an undertaking which can but very seldom be attended with more than moderate success.

The greater part of the chapter on the protection of school buildings from fire appeared in the pages of THE SCHOOL WORLD some two years ago. "One of the great dangers of fire lies in its comparatively rare occurrence"; and that, as everyone will admit, is particularly true of schools, despite the many risks which accrue from the natural proclivities and the innumerable opportunities peculiar to the schoolboy; and although a school might be supposed to be the last place in which rule and discipline should so run to seed as to permit protective apparatus to become decayed and useless, and precautionary drill and inspection to fall into desuetude after the waning of initial enthusiasm. Hence the importance of care in constructive details, and no less of continuous watchfulness in order to secure the perennial efficiency of protective methods. Special care is required when bedding, &c., is being "aired" just before the beginning of a term, although the risk of serious disaster involving loss of life is, of course, much less at this time.

Precise details with regard to the construction and maintenance of school infirmaries and sanatoria are rightly regarded as belonging more to the subject of hospital than of school building. But a point might be made of the importance of providing an adequate playroom for convalescents from illness, constructed and arranged *ad hoc*. It should be of sufficient size, airy, well lighted, and with a sunny aspect, so placed that its inmates may be under proper supervision, while unable to communicate directly with the outside world, and sufficiently removed from the sick-wards to allow of even noisy play being indulged in without subjecting those who are ill to discomfort.

In conclusion, it may safely be said that the present edition of this handsome book worthily maintains the reputation which was so speedily achieved by the first.

MR. CHURTON COLLINS AS A CRITIC.[1]

WE have read this book with interest. Mr. Collins is not of the select few whose criticism penetrates and illuminates once and for ever, but he is a pleasant companion, with a catholic taste in letters, gentle with the minor poets, and appreciative of their major brethren. The papers contained in this volume are above the average of those which appear in the critical journals, and if they do not deserve immortality, most, if not all, deserve to be republished. Mr. Collins holds an equable balance: he is just, with a slight inclination towards mercy. His estimate of his contemporaries, if we may judge from the essay on William Watson, is a little higher than the truth; but he does not use indiscriminating eulogy. Mr. Watson's narrowness of scope is, perhaps, hardly made clear, and posterity may not quite endorse the high estimate which is here given of his work. But Mr. Collins is right in dwelling on the nobility of Mr. Watson's ideals, and of his expression and style; while he suggests an explanation of his somewhat melancholy tone which is new to us, and seems likely to be true: that Mr. Watson is the true poet, struggling against sordid surroundings which make the highest poetry impossible. Impossible, of course, that is, to any but a transcendent genius; but although the genius does sometimes arise as a freak, that is rare, and circumstances generally lead up to him.

An essay on the "Poetry and Poets of America" will contain much that is new to English readers. In view of this fact, we wish that Mr. Collins could have quoted more. There is no use in strings of names, when the names have never been heard of before, whether poems or poets. We are glad to see a true and courageous word said of Walt Whitman, in view of which

1 "Studies in Poetry and Criticism." By T. Churton Collins. x. + 309 pp. (Bell.) 6s. net.

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we wish Mr. Collins would turn his cool analysis on Ibsen. The estimate given of Lord Byron is not quite so clear or convincing as some other parts of the book, but it is interesting. "Miltonic Myths and their Authors" is a misleading title. It really refers to mistaken beliefs about Milton and his works, and the paper contains some amusing stuff.

In the last two papers, Mr. Collins aims at something higher than the rest of the book. In "Longinus and Greek Criticism" he traces the influence of Longinus in England—which, oddly enough, is hardly to be found at all in the nineteenth century—and discusses critical questions connected with the works which bear his name. This is a scholar's theme rather than one for the literary critic, but it is clearly treated in a popular way. When he comes to the matter of the treatise "On the Sublime," Mr. Collins rises to something like enthusiasm. Well is it deserved, and we hope that he may direct many readers to this, the noblest, perhaps, of all books on literary criticism. The last essay, "On the True Functions of Poetry," attempts a subject often attempted without success. Mr. Collins collects a number of proposed definitions of poetry and of remarks about it. His own remarks are full of truth and good sense, and show none of the modern cant about "art for art's sake." He sees for himself, or Longinus has taught him, that the form cannot be separated from the matter. He might have said that perfection of form with utmost degradation and meanness of matter is not poetry but devilry. We have to thank Mr. Collins for his book; it is worth reading.

THE BEST ARRANGEMENT OF THE SCHOOL DAY.[1]

By H. B. TRISTRAM, M.A.
Headmaster of Loretto School.

IN opening a discussion on such a subject, I am rather afraid of seeming to emphasise the obvious, especially as, never having availed myself of the privilege of taking part in such discussions before, I am not quite sure what is obvious and what not. But I think it is, in any case, better to risk repeating the commonplace than to omit any essential details.

And one other word of preface. My experience has been entirely of boys and boarding schools, and so I naturally speak of them. Home work belongs to day schools, and I must leave others to speak of that. But I think there is little in what I am going to say that will not apply equally to girls as to boys.

Now, in all our relations in life, it is well there should be a constant reference to first principles; and so I lay down this as the great first principle on which I found my scheme—that in education, considerations of health are paramount; and I think few who have had any practical experience will dissent from it. Then I deduce directly from this three fundamental rules: first, that boys must have plenty of time for sleep; secondly, they must have exercise in the fresh air in daylight every day; thirdly, the hours of work, both mental and physical, and the hours of meals, should be arranged in mutual relation.

Now, I suppose we here are aiming at counsels of perfection, but perfection is very hard to attain. Still, there must be no doubt that it is what we are aiming at. The test by which we are to try our system is not what is convenient, and what works, but what is rational and what is right. And then too often we are brought up short with what is possible, and we have to be content with some disappointing compromise.

I am not going to say much about the arrangements of the school year. I believe in three terms of more or less equal length; and, so long as Christmas is regarded as a necessary time for holidays, I do not see that we can make much change from what is customary at present. But I will say this much: the summer holidays ought to be the longest, for boys and girls to have plenty of time in the open air, and lay up for themselves a store of health against the coming winter; while the Christmas holidays should be the shortest, for that is a time when over-eating and unwise feeding and late hours do a great deal of harm, and boys generally come back to school after these holidays in poorer health and condition than at any other time. Having said that much, I pass on to the arrangements of the school day, beginning at the beginning.

I am not a believer in school before breakfast, though I know a great many, with far more experience than I have, see nothing but good in it. I have had a fair experience, both as boy and master, and I believe it to be responsible for many colds and much ill-temper. At Winchester, in my day, a glass of milk or a cup of something hot before starting was unknown; and though such things may mitigate the evils of early school, I am rather doubtful of the wisdom of breakfast by instalments. In some schools there is in vogue a custom of making early school a sort of preparation time. The convenience of this is easy to see when day boys and boarders have to be worked all together; but I think it is the worst time in the day for preparation work. Preparation is (or ought to be) the hardest work that a boy has to do; and, at the beginning of the day, the brain has not got into working order, and is not active or agile enough. I have known it given as a reason for this arrangement that ordinary school was too great a strain on the master at such a time. Such a plea is, of course, ridiculous. What is bad for the grown man in this way must be worse for the growing boy. In summer I grant it is different. Boys do not require so much sleep, and may well get up earlier when the mornings are warm and light. But, even so, I should still advocate having no school before breakfast, but breakfast and dinner an hour earlier than in other terms, and any extra school can be put in later in the day.

In the two winter terms, if we have no early school, it is easy to arrange for breakfast about eight and dinner at one. This will give from three to three and a half hours in school in the morning, allowing for three-quarters of an hour in the open air or for some form of physical training, and shorter intervals between the different school periods. But boys are hungry animals, and a well-spent morning is hungry work; and if boys are to keep going strong all the time, in most cases they will probably need something to eat before dinner-time arrives. If a school undertakes to feed a boy, it is bound to give him what food is necessary to keep him in the robustest health; and I protest most strongly against a system which allows—or rather encourages—boys to buy various forms of sweetstuff, which satisfies their hunger for the time, but spoils their dinner afterwards. A plain biscuit or a piece of bread is all that is required, and a boy ought to be able to get that if he

[1] An address delivered in opening a discussion on the subject at the 13th Conference of the Teachers' Guild held at Sheffield in April, 1906.

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wants it without having to buy it. Some schools use the period before dinner as the chief time for exercise and school games. I suppose such an arrangement has the sanction of the medical officers concerned, or it would not be continued; but I am surprised at it, for, to me, it seems genuinely bad. I do not speak without experience; I have been through the mill myself. Out of school at twelve; a rush up to the house to change; down to the football ground for a game of some fifty minutes or so; back to the house to change and wash, so far as possible, before dinner at half-past one. After a morning like that a boy ought to have been hungry enough; but on those days my dinner was a mockery: I could not do justice to it, and other boys were the same; they could not eat a proper dinner so soon after hard exercise. And I was very glad when, a short time after I entered the profession, I was instrumental in getting a longer time for our own boys between football and tea by getting the tea-hour put later, and having an hour's school before it.

Mid-day dinner I take for granted, and I think it is right. And then comes that very difficult time immediately after dinner—not good for hard work, either of brain or body. But there are some subjects which are no great strain on either brain or body, for which it is often difficult to find time in a crowded scheme, such as music, drawing, and, to a certain extent, choral singing. Of course, there are several boys who do not take these subjects, but it ought not to be impossible to find some pursuit for other boys which is not only interesting, but also useful.

And, having tided over this critical time in some such way, we then come to the middle of the afternoon, the right time for that daily exercise which I put down as being necessary. This is not an occasion to discuss what that exercise should be; the great thing is that every boy should have some. But in arranging it we are beset by difficulties. Day boys cause terrible complications. For their convenience, school is crowded up into the early hours of the afternoon, and they often go away immediately after it without joining in the school games, even though they may have the exercise entailed in walking home. Then, again, many boys may not play football; some may not play less violent games. But if schools are to do their duty, they must find for each boy the exercise that is suited to him. We do not want the same form of exercise every day, but we want *some* form of exercise every day; and not only school authorities, but parents as well, must realise that the physical training of the human animal during the period of growth is an integral part of education, and must be recognised and enforced in the system of every school.

The proper position of athletic games in schools is a very interesting question, but I cannot enter on it now. But I will say, in passing, that, after a fairly wide experience, I have come to the conclusion that the old style of Rugby football is superior to all other games in value. Though it may not be the ideal form of hard exercise, it is a magnificent training, not only physical, but also moral.

If the exercise is nothing much more than walking, boys can easily go straight into school for two hours' work; but if they have been doing something hard they will require a little time to recover, and a mouthful of something if they are to do themselves justice in school. Then, with tea about six, we have an evening before us which can be adapted to any requirements.

But afternoon school in the summer is a difficulty which must be faced. If boys have been knocking about for an hour and a half or more in the hot sun, they will be very sleepy when they go into school. I have before suggested that, in summer, breakfast and dinner should be an hour earlier. This will give us dinner at twelve, and afternoon work can be got over by four. But care must be taken that boys have no chance of getting over-heated or tired between dinner and school. The class-rooms must be kept well aired, and please allow (or, better still, compel) boys to take off their coats in school in hot weather. The boys will be fresher, and the work will be better. Some people say that such a novelty—if it is a novelty—will upset discipline and rob the schoolroom of dignity. The novelty will remain a novelty for two days, and will then be regarded as a rational custom; while the discipline and the dignity which depend on a coat are not worth much in the rough and tumble of the world. If we have done a fair afternoon's work by four, we have the cool of the day for out of doors. But growing boys and girls need a great deal of food, and I think it would probably be found necessary to have two light meals, one at four and the other about seven, with preparation after it. Such an arrangement allows for anything from six to eight hours' work in the day, and though it may perhaps be inconvenient, we must remember that we are not thinking of what is convenient, but of what is rational.

As to the hours of sleep, the doctors have spoken, and with no uncertain voice, and they do not seem to have disagreed. Here and there a schoolmaster has protested that they have interfered unnecessarily or ignorantly, but, for the most part, the profession has either accepted their decision or said nothing. Those among us who find that we have been satisfying the demands of the faculty may congratulate ourselves. Those among us who have fallen short had best set their house in order as soon as may be.

I am not going to say at what hours the various subjects should be taken; that is for each Principal to decide for himself, and much depends on what he considers the main object of the work in the schoolroom. I take it there are three main objects: first, to impart some useful information; secondly, to teach boys to use their brains; thirdly, to make them love learning. These three aims are very different, and perhaps belong to different periods of intellectual growth; at any rate, the process in each case is very different, and great (as well as fortunate) is the teacher who can succeed in all three.

Such, then, is a sketch of my programme for the day, and I hope it does not sound too heretical or impracticable. Whatever its inconveniences and whatever its weaknesses, there is one pitfall which I have tried to avoid, a pitfall in which lie lost and buried so many ideas which seemed so excellent, and so many schemes which promised so well—I mean the mistake of making all our arrangements to suit the boy as we think he ought to be, instead of the boy as he is.

COMMERCIAL EDUCATION IN JAPAN.

By TAKEO NISHI,
Professor at the Commercial School, Nagoya.

THE commercial educational institutions in Japan are:—(1) the Easy Commercial School; (2) the Ordinary Commercial School; (3) the Higher Commercial College.

(1) EASY COMMERCIAL SCHOOL.

The easy commercial schools are established in large cities, and they are supported by the municipalities. The course of instruction extends over three years. To the first-year class of the school, any boys who have completed the primary-school course are admitted without an entrance examination. Such boys are generally ten or eleven years old.

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The courses of study are as follows :—

First Year.

	Hours per week.
Commercial morality	1
Reading, writing, and composition	10
Commercial arithmetic	5
Commercial usages and legislation	2
Geography and history of Japan	4
Natural history	2
Drawing	2
English	2
Gymnastics	2

Second Year.

Commercial morality	1
Reading, writing, and composition	9
Commercial arithmetic	5
Bookkeeping	2
Commercial usages and legislation	2
World geography and history	4
Physics and chemistry	2
English	2
Gymnastics	2

Third Year.

Commercial morality	1
Reading, writing, and composition	10
Calculations with the abacus	6
Bookkeeping	6
Practice of commerce	3
English	2
Gymnastics	2

When the students finish their studies in the school they are about thirteen years old on the average, and they mostly enter companies' offices, banks, or private stores of great merchants as apprentices, getting a small salary. Besides this, a few boys engage in the commercial business in their fathers' stores, and the fewest of all enter the ordinary commercial schools.

(2) ORDINARY COMMERCIAL SCHOOL.

Ordinary commercial schools are established and supported by prefectures or cities, but there are some which are established and supported by private persons. The course of instruction extends over one year in the preparatory course and three years in the principal course. Sometimes a post-graduate course extending over one year is established. To the preparatory course, any students who have finished the primary school or the easy commercial school course are admitted. Such students are generally thirteen or fourteen years old.

The courses of study of the ordinary commercial school are as follows :—

Preparatory Course.

	Hours per week.
Commercial morality	2
Writing and composition	7
Arithmetic and calculations with the abacus	5
World geography and history	2
Physics and chemistry	2
Drawing	2
English	7
Gymnastics	3

Principal Course: First Year.

Commercial morality	2
Reading, writing, and composition	6
Commercial arithmetic and algebra	5
Commercial geography and history	2
Bookkeeping	3
Commercial usages and legislation	2
English	8

Second Year.

	Hours per week.
Gymnastics	2
Commercial morality	2
Reading, writing, and composition	3
Algebra and geometry	4
Elements of political economy	3
Bookkeeping	4
Commercial products	2
Commercial usages and legislation	2
English	8
Gymnastics	2

Third Year.

Bookkeeping	4
Elements of political economy and statistics	3
Commercial usages and legislation	10
Jurisprudence, civil law, and commercial law	4
English	9
Gymnastics	2

Post-graduate Course.

Political economy and statistics	2
Commercial law	2
Commercial usages and legislation	8
English	8
Gymnastics	2

Graduates of the ordinary commercial schools mostly become business men. They enter the employ of companies, banks, or enter stores of great merchants as clerks, getting the average salary of fifteen yen (thirty shillings) a month, and they are confidential servants. Besides, there are some who engage in commercial business in their fathers' stores, and some who enter the higher commercial college.

(3) HIGHER COMMERCIAL COLLEGE.

There are three higher commercial colleges in the country, all of them being supported by the central Government. The sites are Tokyo, Kobe, and Nagasaki. The course of instruction is six years in all—one year in the preparatory course, three years in the principal course, and two years in the post-graduate course. Any students who are more than seventeen years old, and who also graduated at the middle school or the ordinary commercial school, are admitted into the preparatory course of the higher commercial college after undergoing an entrance examination in the following subjects :—

(1) Reading, writing, and composition.
(2) Mathematics.
(3) English.
(4) Bodily examination.

The following is a specimen of an entrance examination in English held at the Commercial College of Kobe in 1905 :—

English into Japanese.

(1) It is just possible, no doubt, that a young man may, at the outset of life, mistake his calling; in that case, the sooner he changes it the better.

(2) Do one thing thoroughly rather than many things indifferently; stick to your present post, young man, until a better one opens up. Mind your business, or it will not mind you.

(3) I cannot too much impress on your mind that labour is the condition which Nature has imposed on us in every station in life; there is nothing worth having that can be had without it.

(4) Our officers and crews are highly experienced and disciplined, to say nothing of their patriotism and valour, upon which we depend more than on weapons.

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Japanese into English.

(For the benefit of foreign readers, the English translation is given.)

(1) I have studied German these three years, yet I can neither write nor speak it with ease.

(2) If the war continue for two or three years more, our country can afford the expense easily.

(3) It goes without saying that, after peace is restored, the commerce between Japan and Corea will make a remarkable development.

(4) Mr. Beppu, who has long been studying English literature at the Oxford University, returned home, arriving at Kobe in the evening on the day before yesterday by the steamer *Settsu*.

The courses of instruction of the higher commercial college are as follows:—

Preparatory.

	Hours per week.
Commercial morality	1
Penmanship	1
Commercial correspondence	2
Mathematics	3
Bookkeeping	3
Applied physics and chemistry	4
Jurisprudence	2
Economics	1
English	9
Second foreign language (elective)	3
Gymnastics	3

Principal Course: First Year.

Commercial morality	1
Commercial correspondence	1
Commercial arithmetic	2
Commercial geography	2
Bookkeeping	2
Mechanical engineering	1
Commercial products	3
Economics	3
Private laws	3
English	6
Second foreign language	2
Science of commerce	2
Gymnastics	3

Second Year.

Commercial arithmetic	3
Commercial geography	2
Bookkeeping	2
Economics	3
Statistics	1
Private law	3
English	6
Second foreign language	3
Science of commerce	7
Gymnastics	2

Third Year.

Commercial history	3
Bookkeeping	1
Economics	3
Finance	2
Private law	3
Bankrupt law	1
Administrative law	1
International law	2
English	6
Second foreign language	3
Practices of commerce	5

Post-graduate Course: First Year.

	Hours per week.
Economics	4
Civil law	2
Commercial law	2
Lectures on the economic conditions of the East	2
Criminal code	2
English	2
Second foreign language	5

Second Year.

Economics	4
Civil law	3
Commercial law	2
Politics	2
Modern diplomatic history	2
English	2
Second foreign language	5

The number of graduates of the colleges since their establishment amounts to 1,550 in all. Of this number, some 200 are engaged in banking business, 400 are in companies of several kinds, and 150 have become teachers of ordinary commercial schools. The rest include those who are officials in the Government, or are engaged in commercial business on their own account. Of the graduates of the post-graduate course, there are some who are consuls or diplomatic attachés of the Japanese Legations in foreign countries. The average age of the graduates is twenty-three years and seven months.

Such is the tale that Japan can tell of its achievement in the direction of commercial education.

HISTORY AND CURRENT EVENTS.

"THE Government are resuming the work of the Tudors and Stuarts: they are seeking to subordinate the religion of individual citizens to the supposed needs of national policy." "I hope we are not going to revive the quarrels of the seventeenth century between the public and Churchmen. . . . In this affair, at this moment, if they are so unwise as to force the thing to a rough and furious quarrel, I do ingeminate peace." Our statesmen are evidently reminded, by current events, as these quotations show, of our ecclesiastical quarrels three hundred years ago. The opposition to the Education Bill thinks the Government are imitating the Tudors and Stuarts. Mr. Morley is consciously comparing himself with Lord Falkland. We are reminded of another period of our history, when men's minds harked back to the Stuarts. When George III. was struggling during the first twenty years of his reign to overthrow the Whig oligarchy and to reintroduce methods of personal government, he was often compared by his opponents with Charles I. Our elastic constitution is always subject to strains like these.

THE seventeenth century in England was a period of ecclesiastical strife. It was then assumed by all but a very few that the religious education of *adults* was a matter of State concern. Roman Catholics, English Catholics, Puritans and Separatists, all strove for the mastery. There were advocates of dogmatic teaching, and advocates of Bible teaching with simple explanation. At first the Anglicans or English Catholics had the mastery under Laud. Then there were passive resisters, such as Hampden. Later, the advocates of Bible teaching attained to power, and, under Cromwell, the basis of the national creed was "the Scriptures," and toleration was allowed to all Protestants, but not to "Papists or Prelatists."

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Later again, the Anglicans came into office with the "Restoration," and, in their struggle against James II., were glad of the help of their Puritan enemies. Finally, in 1689, the moderate Anglicans won, and "tolerated" their Protestant allies. Whether this has any parallel with "current events," let our readers "devine," "for I ne dar, bi dere god in heuene."

OUR cousins in the United States of America are thinking of altering their constitution. Some of them have proposed to have the election of Senators effected by the direct vote of the people, and to make the life of Congress four years instead of two. There was once an English parliament that thought English parliaments should live for seven years instead of three. And they carried out the change without consulting the people, even lengthening their own political existence. That was quite legal, though perhaps not "constitutional," *i.e.* not usual. The American Congress can do no such thing. It takes much more than their wishes to effect such changes as these. Senators are chosen at present by the State legislatures, two for each State. It is interesting to study the causes which led to this peculiar arrangement in 1789. Why is there a desire for change? And, considering that the American constitution has never been altered, except in times of great stress, is there any chance for these proposals in "piping times of peace"?

LORD CROMER'S Egyptian reports are always well worth study, not only for the information he gives us on the condition of that land, so strangely situated both geographically and politically, but also for the words of wisdom which they contain. He has no public audience to study. He need, therefore, never use the word "liberty" to evoke a cheer, nor has he need to fear an adverse vote. English people know too little of Egypt to be able to form an opinion on Lord Cromer, and therefore willingly leave him to his appointed task. From his last report we cull this bit of political wisdom: "There are some things which no Government, whatever be the means of which it disposes, can successfully accomplish. There are economic laws which invariably override the wishes and the regulations of any Government. There are limits to the protection which it is possible to afford to an individual against the consequences of his own folly. . . ." Is what is true in Egypt and the Sudan untrue here? Is not the history of economic legislation strewn with the wrecks of statutes stillborn, or repealed soon after their enactment?

ITEMS OF INTEREST.

GENERAL.

THE Education Bill, 1906, was read a second time in the House of Commons on May 11th. An amendment for the rejection of the Bill was negatived by 410 votes against 204. At the time of writing this note, the amendments handed in for consideration during the committee stage of the Bill fill thirty-two printed foolscap pages.

THE announcement made by Mr. Acland at the general meeting of the British and Foreign School Society on May 18th, with regard to grants for training colleges, will meet with warm approval from all educationists. Mr. Acland said that Mr. Birrell had informed him that the sanction of the Chancellor of the Exchequer has been obtained for an undertaking that the Board of Education may now initiate an important new system of building grants, to enable local authorities really to organise, individually, or perhaps more frequently by co-operation, a proper system of training-college provision. Mr. Acland said he understands that the new grant will take the place of the existing building grants, and will amount to a payment to the local authority each year by the Exchequer of 75 per cent. of the interest and sinking fund in respect of any loan that the local authority may incur for providing a new training college. There will, of course, be various checks and conditions to be fulfilled by the authority, which will be seen as soon as the new regulations are issued.

REPLYING to Mr. Lehmann in the House of Commons on May 9th, Mr. Birrell stated that, so far as concerns the regulations of the Board of Education for the Parliamentary grants in respect of secondary schools, (1) no school is eligible unless it admits day scholars freely upon a full conscience clause, and (2) no restrictions of any kind are laid down in regard to the teaching staff except that of educational efficiency; while (3) each school must have a governing body constituted in a manner approved by the Board, upon which in the majority of cases there is some representation of the local authority, though this is not yet laid down as an invariable condition in the regulations. (4) With the exception above-named the current regulations of the Board, being drawn in conformity with the principles of existing legislation, do not restrict the Exchequer grants to such secondary schools as have no denominational or undenominational restrictions upon pupils or staff; and schools of very varying types in this respect, some with and some without the characteristics referred to, are at present on the list of State-aided secondary schools.

CONTINUING, Mr. Birrell said that "as regards grants in aid of secondary schools from the rates or the local taxation fund, a local authority is precluded by section 4 (1) of the Act of 1902 from requiring 'that any particular form of religious instruction or worship, or any religious cathechism or formulary which is distinctive of any particular denomination, shall or shall not be taught, used, or practised in any school, college, or hostel aided but not provided by the Council.' I am not aware of any other religious distinctions which a local authority is statutorily precluded from making."

THE concluding question of Mr. Lehmann, whether the Government contemplates, by legislation or otherwise, to secure that after a certain date grants shall be given only to schools in which there is no denominational disqualification for teachers or pupils, and are subject to popular control, met with the following reply:—The suggested policy raises problems of grave importance, and has been receiving the serious atttention of the Government. Local authorities have as yet themselves provided secondary schools to a very limited extent, and in many cases show great reluctance to incur rate expenditure in this direction, and the large number of efficient secondary schools which would be affected by the proposal are in nearly all cases greatly needed at present for the supply of secondary education in their respective districts. "I am, therefore, not yet prepared to state that they could, without either imposing a burden on the ratepayers which they are apparently unwilling to accept or without inflicting too serious a loss to our existing educational provision, be henceforth deprived of those public moneys upon which depends in almost all cases their efficiency, and in many their very existence. And this is the case, whether it be a question merely of the cessation of the Parliamentary grants, which is a matter of departmental regulation, or, further, of the prohibition of all local grants in aid, which would, of course, require legislation. I may add that the number of secondary schools which, taking last year's

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figures, are subject to full popular control and presumably have no denominational disqualification for teachers or pupils, is, I believe, not more than eighty schools out of the total of some 500 State-aided secondary schools, so far as England (apart from Wales) is concerned, and, so long as this is the case, any Minister responsible for the secondary education of this country must deliberate very seriously before adopting the policy to which, but for these difficulties, he might unhesitatingly adhere."

THE Teachers' Registration Council has adopted a resolution of regret "that the only proposal of the Education Bill with regard to teachers' registration should be one of abolition of the present register rather than of reconstruction, and strongly urges that such abolition should be suspended until further steps have been taken to ascertain the possibility of framing a comprehensive register of teachers more generally acceptable to the whole profession."

THE Board of Education has recently issued a revised code of building regulations for secondary schools, which is worth commenting upon as being a considerable improvement on foregoing issues. A prefatory note sets forth the objects and limitations of the regulations, pointing out their necessary modification when applied to the alteration of existing buildings, and indicating a desire to give friendly assistance and to consider individual cases on their merits. Part i. deals with the dimensions of rooms and school fittings, which are to be complied with or aimed at as circumstances may warrant. Part ii. deals with matters of construction and sanitation, and part iii. with the formalities to be observed and drawings required in making applications to the Board. Parts ii. and iii. may perhaps be relegated to the architect, but part i. should be carefully studied by school managers who contemplate building, as unless the architect is put in possession of definite and carefully thought out requirements, much time will be thrown away, and no satisfactory collaboration can be looked for.

SUCH changes in the dimensions of rooms as are now demanded by the Board of Education are in the direction of economy. A very important concession is the reduction of the size required for the central hall from 8 to 6 square feet per head, a decrease of 25 per cent., which will make quite an appreciable difference to the cost of building, and was obtained through the instrumentality of a body often much abused on the score of extravagance. The area required in class-rooms will also be found to have been slightly reduced in circumstances in which it is found difficult to provide the usual allowance of 18 square feet per head.

ANY well-considered scheme for encouraging and assisting rational methods of teaching in our schools is to be welcomed. We have pleasure in directing the attention of teachers of English subjects to Mr. Coxhead's letter on p. 236 describing steps which are being taken to inaugurate shortly an association, the objects of which are to bring together the advocates of improved methods of teaching the English language and literature and to co-ordinate and combine their individual efforts. It is true that many associations, with similar objects so far as other subjects are concerned, already exist, and that concentrated attention on the claims of a single subject is apt to result in a disposition to underestimate the value of other branches of learning. Yet, until a society is formed for the scientific study of education as a whole, these "subject associations," as Mr. Coxhead calls them, can do valuable work, and it is to be hoped that the new association will prove successful in securing for "English" the place in the school curriculum to which it is justly entitled.

THE *Times* report on the book-prizes in London County Council primary schools points once more to the necessity for periodical revision of such lists. It is not clear from the report of the Education Committee whether or no the head teachers have made up the lists, but we must assume that this is the case. Surely there can be no difference of opinion regarding the unsuitability of the "Origin of Species," "Ingoldsby," and a complete Byron; while "Hypatia" and "Peter Simple" may well be omitted. But there seems to be no principle on which the list is made or revised. It looks as though the revisers were neither asked nor allowed to suggest any books: their function is expurgatorial only. Where are Hughes's "Life of Alfred," Jacobs's and Lang's "Fairy Tales," Yonge's "Golden Deeds," the "Boy's Froissart," the "Boy's Malory," Kinglake's "Eothen"? and where are the beautifully illustrated editions of "Old Christmas," "Bracebridge Hall," "Our Village," and many other good books? Would it not be better for the L.C.C. to print and issue a long list of suitable books? or does the difficulty lie in this, that the majority of prize-choosing people, not having read many books, fall despairingly back on "Robinson Crusoe" and the "Wide, Wide World"? or again, is it that the choice of suitable books and the application for them are left to unsuitable persons? At all events, even the revised list is unsatisfactory.

THE proposed changes in the mathematical tripos at Cambridge should exercise a most beneficial effect, not only on the study of mathematics, but also on the schools of natural science and engineering. Schoolmasters who have had to do with boys intending to take the mechanical science tripos will be specially grateful for the change. Such boys are occasionally good at mathematics, and would benefit greatly by a preliminary course in that subject; and yet it has been impossible to advise them to take the mathematical tripos unless they could spare two years. The proposed part i. provides for such boys, and their last year at school should obviously be devoted to mathematics and physics. The benefits which the scheme confers on students of natural science and engineering are pointed out in the report issued by the Special Board. But another merit of the scheme is that it provides a much sounder training for the average schoolmaster than has hitherto been obtainable. Men who have in the past taken the mathematical tripos, and then have devoted one too short year to natural science, will recognise with envy the advantages of a system which allots one or two years to mathematics of a serviceable kind, and at least two years to science. The new part i. includes all the mathematics necessary for the ordinary teacher, and if it is followed by the natural science tripos, with plenty of time to read for it, no better training could be desired. At present, some mathematical masters know no physics, and some science masters know no mathematics. This undesirable state of things need no longer exist for Cambridge men, if the Senate recognises the merits of the scheme.

THE Board for the Extension of University Teaching of the University of London is arranging a holiday course for foreigners, to be held in London, in July and August, 1906, under the direction of Prof. Walter Rippmann. The full course will extend over four weeks, from July 16th to August 10th, but students will also be admitted to the first or second fortnight only. The course is planned in such a

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way as to be of special value to teachers in Lycées, Collèges, Gymnasien, Real-Gymnasien, Realschulen, and other schools of the same type; but it by no means appeals only to this class of student. Those who propose to attend the course will be expected to have a fair knowledge of the language, and to have made themselves familiar with the mode of transcription adopted by the Association Phonétique Internationale. Arrangements cannot be made for students who are only beginning the study of English, and have no conversational knowledge of the language. Attention will be devoted mainly to spoken English and to English life and ways. To this end there will be lectures and classes. The director will be glad to see students at the University, South Kensington, on July 14th, between 10 and 5. Work will begin on July 16th, when Sir Arthur Rücker will deliver the inaugural address.

IN his report presented at Presentation Day of the University of London on May 9th, Sir Arthur Rücker, the principal, said that the number of candidates for matriculation continues to rise. In 1904–5, 6,666 entered and 3,287 passed; in 1905–6, 6,799 entered and 2,868 passed. In other words, the percentage of failures, which was 50·7 in the former year, rose to 57·8 in 1905–6. Sixty-six holders of Cambridge senior local certificates and twenty-six of Oxford senior local certificates were excused matriculation during the year. A Higher Standard school examination has now been established, so that by means of this, of the ordinary Matriculation Standard examination, and of the Junior Standard examination, it is hoped that the University will be able to meet all the requirements of schools. The Middlesex County Council has invited the University to inspect and examine all the secondary schools under its control. It will be remembered that last year a similar action on the part of the Surrey County Council was reported. The total number of schools inspected or examined increased from twelve in 1903–4 to forty in 1904–5, and will probably amount to forty-five in the session now drawing to a close.

A CONFERENCE was held on May 5th at University College, London, to debate how best to introduce a more general study of Shakespeare into elementary and secondary schools. Dr. Kimmins, who presided, thinks it is of importance to take carefully into consideration the marvellous natural romantic instinct of young children, and see how best to take advantage of it. It is a melancholy fact that in many cases the first introduction which a boy or girl has to Shakespeare in the school is that of reading up a play, together with copious notes, for examination purposes. Prof. Gollancz said the question is how Shakespeare can best be made a real living and happy possession of all the boys and girls who attend school. He read a letter from a master in a secondary school who said that he knows a master who always sets his imposition in Shakespeare, and the boys spend their wet evenings in writing out "Macbeth," and sell the manuscript to their comrades at one penny per hundred lines.

MR. MORLEY has consented publicly to present, at the rooms of the Royal Asiatic Society, on June 19th, the third Empire of India medal, now granted annually by that society to encourage, at the great public schools of this country, an interest in India and Indian history. A book prize is given annually at each of the schools selected for this purpose for an essay on a subject chosen by the council of the society, the award being made by the school authorities. The winning essays are then sent to the council, and the one judged by an examining committee to be the best is awarded the medal. On this occasion the honour has fallen to the representative of Rugby, L. F. Nalder, the subject set for competition being "The Life and Times of Haider Ali, of Mysore." Four additional schools have been admitted into the list of competing schools, originally restricted to seven. They are Marlborough, King's College School, the Perse School, Cambridge, and Glenalmond.

THE annual conference of the Association of Headmistresses will this year be held at the Clapham High School, 63, South Side, Clapham Common, S.W., on June 8th and 9th.

THE third annual conference of the Girls' School Music Union, the object of which is the advancement of music in secondary schools for girls and the discussion of matters connected therewith, was held on May 5th. Members were present from all parts of the country. Dr. W. H. Cummings, principal of the Guildhall School of Music, presided in place of Mr. W. H. Hadow, the president, who was unable to be present. Miss Cecilia Hill, one of the honorary secretaries, read the annual report, in which the committee express themselves satisfied with the development of the union, and point out that improvement is being shown both in the number of members and in financial position. The scheme for providing schools with concerts of educational value has been very successful. The subject of the formation of a lending library is under consideration. Mr. W. H. Hadow was re-elected president for the ensuing year. Dr. Cummings dealt with the question of "The Training of Taste." Papers were read by Miss Emily Daymond, on "Practical Methods of Teaching Theory and Harmony in Schools," and by the Rev. E. H. Fellowes, on "Some Thoughts on the Teaching of the Violin in Girls' Schools."

A DEPUTATION of the Council of the Association of Technical Institutions was received by the President of the Board of Education on May 4th. Sir William Anson, as president of the association, introduced the deputation, and stated that its object was to bring before the Board the importance of increasing the rate of grants to the day technical institutions and for instruction in the more technical subjects in evening classes. Sir Philip Magnus urged the importance of technological subjects in evening classes, and the great cost involved in their maintenance. Unless education authorities are encouraged to conduct such classes, there is, he said, grave fear of their being neglected for subjects, not so important to the industries of the country, which receive higher grants. Principal Reynolds, Prof. Wertheimer, and Principal Wells also spoke, giving figures to show the great cost of the equipment and staff of technical institutions as compared with secondary day schools. Sir William Mather urged the importance of technical education for the maintenance of the industries of the country, and thought an appeal might well be made to employers to contribute towards the cost of technical education. Mr. Birrell, in reply, said that the deputation might rest assured that the Board has every sympathy with the request put forward for increased grants for work in day classes in technical institutes. The Board fully realises the importance of the work which is done. Mr. Birrell, however, reminded the deputation that there are many other important branches of education which are in need of increased grants, and cordially supported what Sir William Mather had said as to the importance of employers contributing to these institutes.

MR. BIRRELL, when opening the new county school at Acton recently, gave governing bodies some sensible advice as to how headmasters should be treated. The following

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selections from his remarks will indicate the views of the President of the Board of Education:—Headmasters must be allowed to be captains on their own quarter-decks. The success of a school depends on the character, energy, and skill of the headmaster aided by his assistants. Local authorities cannot influence boys much; headmasters can. Local authorities, once having chosen their headmaster, should stick to him, encourage him, support him, and let him have as much of his own way as possible. Let them not curtail his authority nor restrict his influence, but support him generously. The work of the school must be his, and his alone.

IN consequence of the success of the Kensington Vacation Course for Teachers held last August in the Froebel Educational Institute, West Kensington, arrangements are being made to repeat it during the two weeks July 30th to August 11th. As accommodation is limited, early application is requested. Applications for prospectuses, tickets, and all inquiries should be addressed to the secretary, Miss M. E. Findlay, Hadleigh Road, Leigh Village, Leigh-on-Sea.

WE have received a copy of a recent issue of the *Feildian*, "the quarterly magazine pertaining to Bishop Feild College and the Church of England Schools of Newfoundland." The headmaster's report for the year ended June 30th, 1905, is included, and we congratulate Mr. W. W. Blackall on the excellent work accomplished by him and his staff at Bishop Feild College.

MISS WALTER is arranging another holiday to Switzerland this summer. The party will start on August 7th, and is organised for a fortnight. The time will be divided between Grindelwald and St. Beatenberg. Grindelwald between 3,000 ft. and 4,000 ft. high, is one of the famous spots of the Bernese Oberland, and St. Beatenberg, 3,775 ft. high, is on the Lake of Thun, and commands a wonderful view of the Alps. The cost of the holiday is about ten guineas, inclusive of board and lodging. The route out is *via* Dover, Calais, Basle, and Berne; and the return journey *via* Lake Brienz, the famous Brunig Pass, and Lucerne. Second-class carriages will be reserved from London, and the tickets will be available for twenty-five days for those wishing to prolong their stay. Further information will be supplied by Miss Walter, 38, Woodberry Grove, Finsbury Park, N.; and application should be made early, as the party, which is not organised for private profit, is limited in number.

MR. E. A. VIRGO, of Westminster City School, formerly assistant-secretary of the Incorporated Association of Assistant-Masters, has been appointed registrar of the Joint Agency for Assistant-Masters.

JUNE 21ST is the last day for application for admission to the competition in July for 100 appointments as assistant-clerks (abstractors). The limits of age are nineteen and twenty-one. Most of the appointments are in London. The salary is £55 a year, rising by £5 to £150. This is now the only competition limited to boy clerks and boy copyists, of whom nearly 1,000 are appointed annually. There is one other provision to enable them to obtain permanent appointments in the service—the introduction of "service marks" allowed in the Excise, Customs, Customs Port Service, and Second Division examinations. Service marks became effective in the Second Division on being increased in 1904; their effect in the other examinations can only be estimated, but they cannot secure permanent appointments for more than half the boy clerks registered. For instance, in one year there were 900 vacancies for boy clerks, 200 for abstractors, and 300 in the four branches in which service marks are allowed. If, then, service marks had enabled boy clerks to take one-third of these appointments, only one in every three boy clerks would become permanent civil servants; the other two would have to seek other employment at twenty, an age at which new clerks are not welcomed by private employers.

THE following paragraph from the notice issued by the Civil Service Commission as to the appointments in the Army Accounts and Exchequer and Audit Departments indicates a desire to attract public-school boys into the Service and, perhaps unduly, to smooth their path:—"The following is a provisional list of provincial centres at which the written part of the examination may be held (as well as in London, Dublin, and Edinburgh), provided that the necessary conditions are complied with:—Bedford (Grammar School), Bradfield (The College), Bristol (Clifton College), Charterhouse, Cheltenham (The College), Dover (The College), Eton College, Felsted (The School), Haileybury (The College), Harpenden (United Services College), Harrow (The School), Malvern (The College), Portsmouth (Grammar School), Radley (The College), Rugby (The School), Uppingham (The School), Wellington College, Winchester College. The oral and practical parts of the examination will be held in London only."

SCOTTISH.

THE general report for 1905, by Mr. A. E. Scougal, H.M. Senior Chief Inspector of Schools, has just been issued. It contains no startlingly new features, but there is in it plenty of evidence of the thoroughness and earnestness with which the work of teaching and inspecting is being done. The attendance, we are told, continues to show steady, if slow, improvement. The percentage of average attendance has risen in the Edinburgh district from 87·1 to 87·9, and in Leith from 84·7 to 85·4. During the year attention has been chiefly concentrated on the instruction in arithmetic and English. (One would like to know how the other subjects have fared during this concentration. A high barometer in these subjects is almost certain to coincide with a wave of depression in the others.) A gradual advance is perceptible, and there is abundant evidence to warrant the conclusion that the instruction is gaining in breadth and intelligence. It is pointed out that the percentage of pupils who pass on to the supplementary courses is still far from satisfactory. It is calculated that about 11 per cent. of the pupils on the roll should each year reach the qualifying stage, but the percentage actually attained during the past session was only 6·3 in Edinburgh and 4·7 in Glasgow. Several causes are brought forward to account for this discrepancy between the real and the ideal, but the simplest does not seem to have occurred to the writer of the report, viz., that the ideal has been placed far too high. There is quite evident in the report a desire at all hazards to rush children up to the supplementary courses as if they were the Elysian fields of the elementary schools. Mr. Scougal may be reminded that the root idea of "school" is the Greek σχολή, leisure, and that a feverish haste towards a desired goal, however excellent it may be, is likely to defeat the very object he has so transparently at heart—the sound education of the young.

FOR the second time in its history, Commemoration Day has been observed at Glasgow University. This new and valuable feature was introduced into the academic life of the city two years ago, and the intention is that it should be repeated biennially. Its main object is to commemorate the great names associated with this ancient seat of learn-

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ing, and thereby to stimulate the interest of graduates in their *alma mater*. The arrangements embraced a religious service, a discourse on Francis Hutchison (who was professor of moral philosophy in the college from 1730 to 1745) by Prof. Jones, the present occupant of the philosophy chair, and the conferring of honorary degrees. Advantage was also taken of the occasion to present Principal Story with his portrait, a remarkably fine specimen of the work of Sir George Reid. A dinner in the evening brought the proceedings to a close.

THE annual report of the Dick Bequest Schools shows that the total number of schools under the Trust during 1905 was 127. The total number of candidates for capitation grants was 2,309, as against 2,036 in 1904. Of these, 1,611 obtained passes, a very satisfactory proportion in view of the high standard that is required. Prof. Laurie in his report expresses approval of the new regulations for the training of teachers. Dealing with the scarcity of male teachers, Prof. Laurie states that in the schools connected with the Dick Bequest there is never any difficulty in securing well-qualified graduates as teachers. He ascribes this result to the comparatively high salaries that Dick Bequest Schools are enabled to offer to teachers through the operations of the Trust. Many people will agree with the professor when he says that if measures were taken in every rural parish of Scotland to provide a school giving secondary education up to the standard of the Intermediate certificate, the master receiving a salary of not less than £200 with house and garden, and being further secured in an adequate superannuation allowance, many educational problems would be solved in the simplest way and in accordance with the best Scottish traditions.

THE Lord Provost's Committee of the Edinburgh Town Council has had under consideration a letter from the Scottish Education Department on the subject of the establishment of an art school in Edinburgh. The Department hoped the Council, following the procedure of many municipalities in England, would be willing to take into consideration the question of establishing a municipal school of art for Edinburgh. Such a school would be under the ultimate control of the Town Council, but they would doubtless find it expedient to commit the immediate direction of the work of the school to a committee, partly composed of members of their own body and partly of persons well known for their interest in, and special knowledge of, various branches of art. It is satisfactory to find that the Lord Provost's Committee gave these proposals a most favourable consideration. On the general principle of the advisability of instituting such a school, all were agreed. The questions of site, always a thorny subject in Edinburgh, and of finance gave rise to some discussion, but these were departed from meanwhile, and it was agreed to send on the proposals to the Council with their unanimous approval.

THE committee on educational policy and methods of Glasgow University Council has prepared an exhaustive report on the draft regulations for the training of teachers, particularly in regard to their bearing on the scope and character of university teaching. The committee considers that the direct part which the University is expected to play in the training of teachers cannot fail to react on, and strengthen, university life. Thorough approval is expressed of the Department's provision for securing for secondary schools teachers of the highest scholastic attainments, and the committee anticipates a considerable increase in the numbers going forward to an Honours ccurse in consequence of these regulations. Finally, the committee considers that the time is ripe for a serious attempt to organise a faculty of education in the University. This admirable report was submitted to the Council by Dr. John G. Kerr, convener of the committee, and was unanimously approved.

LORD PROVOST SIR ROBERT CRANSTON presided at the annual distribution of class medals and prizes in the Heriot-Watt College, Edinburgh. During the past session 4,000 students have been in attendance at the classes, and more than £3,000 has been paid in fees. This voluntary enrolment in educational classes of the youth of the city is one of the most hopeful signs of the day. It shows that the recognition of the value of education has been brought home to those upon whom the future fortunes of the country depend. The Lord Provost urged upon the Government the necessity for a still greater development of technical education, and for this more money will be required. He trusts education will never result with them as it does with some—in making them snobs. The man who thinks that because he is educated he is demeaning himself by putting his hands to trade is a snob of the first water.

IRISH.

THE rules and programme of the examinations of the Intermediate Education Board for 1907 were published at the beginning of May—a date of which no complaint can be made. For the first time, the programme of experimental science, drawing, manual instruction for day secondary schools, regulations and syllabus, are bound together with the Intermediate rules, thus making one convenient pamphlet. There are not this year any radical changes, but there are, nevertheless, some important alterations. The chief is the simplification of the conditions of passing in the junior, middle, and senior grades, and corresponds exactly with a suggestion made by the Teachers' Guild last autumn. The group system is abandoned for pass students; they are required to pass in six subjects, as follows: (A) English language and literature, (B) Latin or French or German, (C) one mathematical subject, (D) experimental science, (E) and (F) two other subjects. Students who have already passed in the two years' preliminary course in experimental science may substitute for (D) a second language or a second mathematical subject. This rule is likely to give general satisfaction.

ANOTHER group of new rules defines the principles on which exhibitions and prizes will be awarded, and was absolutely necessary after the dissatisfaction caused by last year's awards and the subsequent revisions under stress of public opinion. The rules, though complicated in detail, will probably work smoothly. They are based upon what is called a standard mark for each grade and course, which is arrived at by taking the average mark of the first five students in each grade and course respectively. Students who obtain 75 per cent. of this standard mark will be eligible for exhibitions, and those who obtain 60 per cent. will be eligible for prizes; but in either case not more than one-half and not less than one-fourth of the number of students qualified in each course and grade will receive exhibitions and prizes. These rules will come into force for the forthcoming examinations. There will be a differentiation in favour of girls in classics and mathematics, their standard for exhibitions being 70 per cent. and for prizes 60 per cent. For the rest, we observe that trigonometry is introduced as a pass and honour subject in the middle grade, that students presenting Latin and Greek may be excused experimental science if they obtain at least 20 per cent. of the maximum marks in each of these sub-

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jects, and that in the experimental science course in the senior grade trigonometry is allowed as an alternative to algebra and geometry.

THE Intermediate Board has issued notice of alterations in the time-table of examinations for this June. Italian and Spanish are to be interchanged on June 11th, Italian being set in the morning from eleven to one, and Spanish in the afternoon from two to four; natural philosophy, which was originally fixed for June 25th, is brought forward to the 11th, and set in the afternoon from two to four.

THE Association of Catholic Headmasters at their spring meeting met under the presidency of the Very Rev. Vincent Byrne, S.J., of Clongowes Wood College, and representatives of the Convent Schools' Committee were present and took part. It was resolved again to urge on the Intermediate Board the utterly objectionable character of Rule 43, pointing out that it will, beyond all doubt, exclude from the competitions for medals and prizes some of the best candidates; that it will result in the study of Latin being reduced to mere mediocrity, except with boys who also take Greek; that it will operate similarly in mathematics; and that it will tend strongly to promote a spurious specialisation in the junior grade, where specialisation is condemned by everybody. It was also agreed to ask the Intermediate Board once more to make music an honour as well as a pass subject, the pass examination in theory to be held by the inspectors who conduct the practical examinations, and the written paper to be a test for honours; also to make physiology and hygiene and domestic economy main subjects for girls, as being in a large proportion of cases more suitable than chemistry or physics.

THE proposal of the English Education Bill to abandon registration has caused a widespread feeling of discouragement among secondary teachers in Ireland. A fair number of them have taken advantage of it to put their names on the register, and several schools have paid fees to secure recognition by the Board of Education; and it was generally considered that the first step had been taken towards securing the official adoption of registration for Ireland with the prospect of a genuine profession, the need of which is so generally acknowledged. With this hope in view, schemes of training for teachers have been started which were expected to develop under a broad-minded reform of secondary education. A memorial has therefore been drawn up under the auspices of the Women's Graduates' Association to beg the Chief Secretary to use his influence to bring about the withdrawal of the objectionable clause, which is, after all, no integral part of the Bill.

THE inquiry into the working of the Department of Agriculture and Technical Instruction opened at the end of April in London. It is conducted by Sir Kenelm Digby; the Hon. John Dryden, late Minister of Agriculture in Ontario; Mr. W. L. Micks, member of the Local Government Board for Ireland; Mr. F. G. Ogilvie, principal assistant-secretary for technology in the Board of Education; Mr. Stephen Brown, J.P., chairman of the County Kildare County Council; and Mr. J. J. Taylor, secretary. The first witness was Mr. Gerald Balfour, who was Chief Secretary for Ireland when the Act was passed in 1899 constituting the Department. He was followed by Sir Horace Plunkett, the vice-president, who pointed out that technical instruction was crippled for want of funds, the grants were not high enough, and the country was miserably equipped with buildings. He gave it as his opinion that management by unpaid Boards, however zealous, was a failure, and that all Boards must nowadays be managed by paid experts.

THE Department is organising a course of instruction in manual training (woodwork), to begin on September 4th in Dublin and to last for about eight months. It is intended to train persons to give instruction in woodwork as itinerant instructors under county schemes, in technical schools, and in day secondary schools. A limited number of scholarships tenable at this course is offered for competition among artisans and others between the ages of twenty-one and thirty. A scholarship will include free instruction, a maintenance allowance of 30s. per week during the course, and one third-class railway fare to and from Dublin. Candidates must have been born in Ireland or have lived in Ireland for three years prior to July 1st, 1906. The examination for these scholarships will be held in Dublin, Belfast, Cork, and Galway, on Saturday, July 21st. Full particulars can be obtained from the Department, application to which must be made before June 30th.

WELSH.

THE organiser of education for the county of Denbigh considers that a large amount of the £1,200 to £1,500 spent on the evening continuation schools in that county is wasted, for the children come to their further studies with quite inadequate preparation. Mr. Owen Owen, chief inspector of the county schools, holds that entrance scholarships into the county schools should be based on fifth-standard work. Then the sixth and seventh standards could be reserved entirely for those children who do not proceed to the county schools. This would afford better preparation than now obtains for those who afterwards go to the evening continuation schools.

WELSH has now for some time been taught at the Pupil-Teachers' Centre in Cardiff. This seems a necessary step if the future teachers are to get a sufficient grip of the language for teaching purposes. But such study must be continued by the pupil-teachers in the university college to which they go if they are to get a real student's knowledge of the subject. It appears that circulars have been issued in Cardiff to all teachers in the city to ascertain how many of them wish to be taught Welsh in order to become teachers of the language themselves. A considerable number of replies were received, and classes have been formed. The direct method is employed, with a free use of the blackboard and pictures. The method by which the students learn is thus precisely the method by which they will be best able to instruct their own pupils later on.

THE following is a copy of clause 37 of the Education Bill, 1906:—Council for Wales. 37.—(1) His Majesty may, by Order in Council, establish a central education authority for Wales, to be called the Council of Wales, consisting of members appointed by the councils of counties and of county boroughs and of any boroughs and urban districts having a population of over twenty-five thousand, according to the census of one thousand nine hundred and one. (2) In determining the number of representatives to be appointed by each of those authorities, regard shall be had, among other matters, to population and rateable value, provided that the council of each county and of each county borough shall appoint at least two representatives. (3) The Council of Wales shall have power to supply and to aid the supply of education of all kinds in Wales. (4) The following powers and duties, so far as they relate to Wales, shall, subject to such exceptions as His Majesty may make by Order in Council, be transferred to the Council of

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Wales :—(*a*) the powers and duties of the Board of Education; and (*b*) the powers and duties of the Board of Agriculture with respect to instruction connected with agriculture and forestry; and (*c*) the powers and duties of the Central Welsh Board for Intermediate Education. (5) The Board of Education shall in each year pay to the Council of Wales any money which may be granted by Parliament in respect of education and science and art in Wales, with the exception of money granted in aid of universities and university colleges. (6) The Order in Council may make provision for the Council of Wales having power to raise any money required by them by means of contributions from the authorities who appoint members of that Council, and for the borrowing of money and acquisition and holding of land by the Council, and for any other matters for which it is necessary or expedient to make provision for the purpose of enabling the Council to perform its duties or exercise its powers. (7) An Order in Council made for the purposes of this section may be varied or revoked by any subsequent order so made. (8) The draft of any Order in Council proposed to be made under this section shall be laid before each House of Parliament for not less than four weeks during which that House is sitting before it is submitted to His Majesty in Council. (9) This section shall apply to the county of Monmouth as if it were part of Wales.

THE British Association for the Advancement of Science has directed the attention of the Cardiff Naturalists' Society to the desirability of taking measures for the protection of the rarer wild plants in the Cardiff district. It has been urged that, owing to the nature-study in the schools, there is a danger of some of the children almost exterminating rare wild plants. The Cardiff Education Committee have resolved accordingly to circularise the headmasters and headmistresses with the object of regulating the teaching of botany so as to discourage the search for varieties. One councillor observed that he was surprised by his own children saying that they were encouraged by a teacher to search for birds' eggs, and then blow and string them and bring them to school. "That teacher," added the councillor, "was not in an elementary school."

THE Merioneth Education Committee have resolved that a wall chart on the effects of smoking on children be supplied to every school in which boys above the age of infants are taught, and that the teachers be requested to direct the attention of the boys to the chart and explain it to them. The committee also have approved the suggestion of legislation to prevent the sale of tobacco to school children.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Rippmann's Picture Vocabulary. French: First Series. (Dent.) 1*s.* net.—This is a splendid idea, well carried out. Ever since the learning of foreign languages began, it has been obvious that the scholar must possess a certain number of words of the foreign tongue. In far-off days (are these so far off in certain schools?) he was compelled to learn by heart long strings of words which had but little connection with one another. This method having deservedly fallen into disrepute, pupils were allowed to pick up what words they could from their reading. But it was found that under this system boys often reached a high form, ignorant of certain very common words of everyday use. Then came the excellent vocabulary of Messrs. Storr and Anderson, which supplied a minimum of words and phrases that no boy or girl ought to leave school without knowing. But Prof. Rippmann has coupled the word with the picture. On the right hand of each of the twelve pages of this book we have pictures of certain everyday matters—*e.g.* articles of clothing, the sitting-room and its contents, the kitchen, games and hobbies, professions, the hotel, craftsmen—and on the left hand we have the French words corresponding to the figures, which are lettered. The most hide-bound new methodist will not object to using this book, for it does not contain a word of English, except the preface; but it does contain a most useful index. It would be well if each page could be printed separately, with the French on the back, so that pupils could be more easily examined in their words.

Supplementary Exercises to Dent's New First French Book. By H. C. Norman. 32 pp. (Dent.) 6*d.* net.—These exercises follow pretty closely along the lines of those in the book of which they are the sequel. Those teachers who find their pupils need additional oral or written work will find them useful. The questions are not invariably put in the way we should expect a Frenchman to ask them, *e.g.* on p. 5, "Qu'est-ce que Charles et Julie font?" seems a very Anglo-French way of saying "Que font Charles et Julie?" There is always a danger that such inelegant forms may remain in the retentive memory of the young. We have nothing but praise for the excellent way in which this series is printed and bound; it should exercise an important influence on the æsthetic instinct of the child.

Dent's Short French Readers. (1) *L'Eléphant blanc.* By H. de Varigny. Edited by W. O. Brigstocke and H. Cammartin. (2) *Contes du Temps Passé.* By Perrault. Edited by G. Heyer and H. Cammartin. (Dent.) 4*d.* each.—Mr. Brigstocke, the popular secretary of the Modern Language Association, has not fallen into Mr. Norman's error. He has associated with himself a French editor, so that the notes in these short readers are in excellent French. Messrs. Dent have entered the field of the short French reader somewhat late in the day, but the result is very satisfactory. Each of these two books contains 48 pages of text and notes, and is bound in limp cloth. The notes on historical and other allusions are in French at the bottom of the page, and there are "reform exercises" (*i.e.* questions in French expecting French answers) on every other page or so. On p. 1 of *L'Eléphant blanc* there are bad misprints on lines 14 and 17, and on line 1 of p. 10.

Italian Self-taught. By C. A. Thimm. 120 pp. (Marlborough.) 1*s.* 6*d.*—This is the third edition of a very well compiled manual, most useful for those intending to spend some time in Italy and desirous of acquiring quickly the ordinary phrases of daily life. We have noticed improvements in the preliminary notes and in the sections dealing with correspondence, post-office and telegrams, money, weights, and measures; there are new sections on amusements, motoring, commercial and trading terms, religion, and health. The section of idiomatic expressions and phrases has been considerably extended. The author seems to have spared no pains, and we can warmly recommend this book to travellers; even the teacher may find the vocabularies useful.

C. Nodier, Jean Sbogar. Edited by D. L. Savory. xix. +113 pp. (Oxford: Clarendon Press). 2*s.*—This is a very careful piece of work, the introduction in particular being interesting and well put together. The tale itself is perhaps better suited for private reading than for use in class. The

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style is at times peculiar, and sometimes disconcerting; there is a luxuriance of epithets which cloys. The notes are written very conscientiously; they give all help that is required and even some that is superfluous. The diligence with which the proof has been read deserves special mention; we have only noticed *Charities* (for *Charités*) on page 125, and a Greek word without breathing and accent on page 134. Mr. Savory has added a useful list of Nodier's works and of books about Nodier.

A. Gennevraye, Marchand d'Allumettes. viii.+128 pp. (Macmillan.) 2*s*.—This is an excellent story, ably edited. We miss an account of the author, but the notes are exceptionally good. There is hardly anything to criticise. In a note on page 64 the negative in *Il y a si longtemps que nous ne nous sommes vus* is called "redundant." Why? Is the French not equivalent to our "It is so long that we have not seen each other"? On page 73 *assiérai* is a misprint; *ne* (for *en*) on page 31, line 30, is the only other we have found. The vocabulary is practically complete. In the passages for translation into French there are some lapses in style, and we hear for the first time of the existence of "four-pound notes."

G. de Nerval, La Main Enchantée. Edited by H. H. Horton. 55 pp. (Blackie.) 6*d*.—A good short story, rather uncanny in parts. The editor supplies a satisfactory biographical introduction. In the notes we meet again with our old friend "Why subjunctive?", which we thought had disappeared for good from the *Little French Classics*. On page 42 it is stated that Villon died in 1489—we should like to know on what evidence. *Basochian*, on page 43, is a misprint. The rule about *moins de* and *moins que* is incompletely given on page 50; would the editor say *Cet homme mange moins de deux enfants* for "This man eats less than two children (eat)"?

Classics.

Blackie's Latin Texts. General Editor, Dr. W. H. D. Rouse. *Caesar: Gallic War.* Book V., xi.+36 pp., and Book VI., xi.+27 pp. Edited by the General Editor. *Cicero: De Amicitia*, xiii.+42 pp. Edited by Dr. J. S. Reid. *Virgil: Bucolics.* xiv.+40 pp. *Aeneid.* Book I., xiv.+26 pp.; Book II., xiv.+28 pp.; Book III., xiv.+24 pp.; Book IV., xiv.+25 pp.; Book VI., xiv.+30 pp. Edited by S. E. Wimbolt. *Ilias Latina.* v.+40 pp. Edited by W. H. S. Jones. All 6*d*. each. *Livy.* Book VI. xiv.+62 pp. Edited by E. Seymer Thompson. 8*d*.—These eleven books are the latest instalment of this series. They are intended for the first two or three years of the study of Latin, and give a well-printed text accompanied only by a few critical notes at the bottom of the page. They also profess to mark all vowels long by nature, including those before two or more consonants. The series is a compliment to the intelligence of the schoolboy, as Mr. Chesterton says Browning's poetry was to that of the British public, and we are glad to see an attempt to widen the range of his reading by the introduction of the *Ilias Latina*, a piece of easy reading which is an interesting, if not always an accurate, summary of Homer's work. The introductions are to the point, the facts about the authors being clearly and tersely put; and it would be difficult, for example, to improve on Mr. Thompson's appreciation of Livy within the compass of three small pages. The sections on style and MSS. will probably be skipped by most of the students, and perhaps this is intended, as in the introductions no quantities are marked. We wish Dr. Rouse had added to each book a statement of the principles of spelling adopted, and of the rules for long quantities before two consonants. In the absence of this we are puzzled by certain variations which are perhaps only due to insufficient revision, of which we are afraid there is clear evidence. To begin with, the editor of Livy is given as Thomson (*sic*); the introduction to Virgil, the same for all six books, contains mistakes on pp. vii (where MS. F is twice referred to as E), x, xii, xiii, and xiv. It is perhaps only natural that some of the long vowels should in every book escape being marked, *e.g.* in the De Am. the final long *a* of the abl. *amicitia* is overlooked on pp. 20, 26, 27, 28, 34. But the following are more serious: *accidunt* (B. G., VI., p. 16), *īdus*, (Livy, VI., pp. 2, 3), *inrĭtae* (*ib*., p. 50), *utĭque* (*ib*., p. 58). In the Ilias, l. 105, *Omnipotente* seems a mistake for *Ignipotente*, and l. 351, *visit* for *misit*. In Ecl., VI., 51, *quaesissent* is a mistake for *quaesisset*, and in Aen., VI., 222, we have *pars ingente subiēre ferōtrī*! There is no consistency in the spelling *-vŏs* or *-vŭs*. We can understand spellings like *servos* for the Ciceronian, and *servus* for the Augustan period, but we cannot understand *voltus* and *vultus* (Aen., I., 684, 710), *volgus* and *vulgus* (Aen., I., 149, 190), on opposite pages. Similarly we have *volnero* and *vulnero* (B. G., V., cc. 43, 58), *tuum* and *tuom* (Ecl., V., 27, 45, 51, 78). Again, on consecutive pages we have for the acc. pl. *hostīs* and *hostes* (Livy, VI., c. 2, §§ 4, 11), and again, *patentīs* (c. 3, § 5) and *abnuentēs* (c. 6, § 5). Nor is the marking of "concealed quantities" consistent; *e.g. intermissio* and *dimisso* (De Am., §§ 8, 12), *nox* and *nōx* (Aen., VI., 539, 866). Some of the markings require reconsideration; the following, which are certainly long, are not marked: *vīxeris* (De Am., § 77), *ācto* (Livy, VI., c. 1, § 4), *iūnctus* (B. G., V., 29); and a good many are marked long which are not recognised by Lindsay or Hale and Buck; indeed, these authorities say some of them are probably short. Here are instances: *cessit* (B. G., V., 35; Aen., IV., 705), *classis* (Aen., I., 310), the first syllable of *cognoscere* (Ecl., IV., 27), *iussit* (Livy, VI., 2), *magnus* (B. G., VI., 3), *misceo* (Aen., IV., 570), *mitto*, *missus* (B. G., V., 39; Aen., VI., 380; II., 1057), *nox* (Aen., VI., 866), *signum* (B. G., V., 34), *tegmen* (Ecl., I., 1), *ulterius* (II., 695).

FOUR new numbers of Arnold's Latin Texts are now before us: *Cicero, First and Second Speeches against Catiline*, and *Horace, Odes, Book I.*, edited by L. D. Wainwright; *Livy, Selections*, edited by R. M. Henry; and *Selections from Phaedrus*, edited by Margaret Brock. Each 64 pp.; 8*d*.—Our remarks on the others apply in general to these. In the *Horace*, the long vowels (except when they are in position) are marked in half of each ode; in the *Cicero* and *Livy*, the long vowels are marked all through; so also in *Phaedrus*. The last book, however, marks the first syllable of *huic* and *cuidam* with a long stroke over both *u* and *i*, which is incorrect, *u* being the consonant. The marking in *Phaedrus* is altogether a mistake, for his verses are scanned on the Plautine system, word-accent being the guiding principle, not quantity. Thus the metrical scheme is misleading, and does not at all represent the way in which the poems were recited. A few omissions have been made in the text of the *Cicero*. *Phaedrus* is provided with some exercises in re-translation. The *Livy* is the best of these books, because it contains interesting pieces of Latin which could not be conveniently got elsewhere for beginners' use.

Xenophontis Opera Omnia: recognovit brevique adnotatione critica instruxit E. C. Marchant. *I., Historia Graeca.—A Commentary with Introduction and Appendix*

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on the Hellenica of Xenophon by G. E. Underhill. xcvi.+378 pp. (Clarendon Press.) 7*s.* 6*d.* net.—We have already reviewed Mr. Underhill's notes in these pages, and the text of the Oxford edition. Both are here bound together in one volume. The book is fat and cumbrous, and we see no gain in binding the two parts together, unless it be a gain that people are used to the custom. The book is a good one, however, and will prove useful to students, in whatever form they prefer to buy it.

English.

In Memoriam. By Lord Tennyson. 265 pp. (Macmillan.) 5*s.* net.—This volume embodies Tennyson's own notes to his most popular poem. These are not in bulk a considerable addition to the volume, but in literary interest they constitute a remarkable feature. They have been edited by the second Lord Tennyson, who writes an introductory section dealing with the moods and mental attitudes which characterised the great Laureate's view of life, and the problems out of which this poem took its rise. Nobody probably could have done this work better; and we have in these pages a valuable contribution to our knowledge of Tennyson's personality. To many of the notes left by the poet the second Lord Tennyson contributes comments and reflections, often based upon the biography of his father which he has published, and sometimes continuing what may be called the poet's "table talk." All lovers of Tennyson ought to feel grateful for the issue of this volume.

The Sounds of Spoken English. By Walter Rippmann. 1–126 pp. (Dent.) 1*s.* 6*d.*—Prof. Rippmann is an acknowledged authority, and this book was badly wanted. It is safe to predict that another edition will be called for, and no doubt many suggestions will be received by, and some accepted by, the author. Twenty pages are given to the organs of speech and fifty to the analysis of separate sounds, while a few pages at the end deal with lists of mispronounced words and with the teaching of reading. The alphabet of the Association Phonétique is adopted throughout the illustrations. When we come to use the book, we may find it too advanced for the ordinary learner. It is rather too full of technical terms, and it might be expanded by means of reading exercises, which, put at the beginning, would give an easy introduction to unfamiliar script. Of course it is assumed by the author, and we suppose by the teacher, that it is a good thing to try to teach standard English. The dialects have gone; school English, teachers' English, Oxford English, Girton English flourish; perhaps Prof. Rippmann's book may lead to a study of standard English. The book might well be interleaved by those using it carefully.

Scott's Ivanhoe. By Fanny Johnson. xx.+291 pp. (Macmillan.) 1*s.* 6*d.*—This carefully abridged and well edited edition of Scott's great novel is an addition to the well-known series for secondary schools. It may be said at once that it admirably serves its purpose, and ought to be welcomed and used.

Scenes from Old Play-Books. By Percy Simpson. 1–248 pp. (Clarendon Press.) 3*s.* 6*d.*—This is a distinctly original book, although the title is rather a misnomer. After the introduction, which is a very bright account of Shakespeare's theatre (but which in our opinion is much too short), the compiler gives us extracts from twenty different plays. It is a pity that there is so much Shakespeare in the book, when there were so many old play-books, non-Shakespearian, ready to hand. A feature of this volume is the fulness of the stage directions; we hope that in another edition Mr. Simpson will make these fuller still.

The Squiere's Tale. By A. D. Innes. 46 pp. (Blackie.) 2*d.*—This addition of one of Chaucer's best-known productions to this well-known series of English classics is a happy venture. The introductory matter and notes are excellent.

Livy's Hannibal in Italy. 123 pp. *De Quincey's English Mail Coach.* 96 pp. *Travels in Thibet.* 111 pp. *The Travels of Captain John Smith.* 137 pp. (Blackie.) 8*d.* each.—These are some more of Dr. Rouse's little reading-books, and in them he continues his useful labour of providing quite uncustomary reading-matter which is carefully selected, very interesting, and in all cases valuable as literature. We once more give unstinted praise to these little text-books.

Paradise Lost. Book IV., xiii.+43 pp. Book V., xiv.+38 pp. By D. Salmon and W. Elliott. (Longmans.) 6*d.* each, net.—A continuation of Messrs. Longmans' series of class-books to which we have previously accorded praise. These latter volumes are as good as the foregoing ones, and for the excellence of their notes and the comprehensive brevity of their introductory matter deserve attention.

History

English Historians. By A. J. Grant. lxxxvi.+251 pp. (Blackie.) 2*s.* 6*d.*—This book consists of two "parts" and an introduction. The first consists of thirteen passages selected from Lord Bacon, Edmund Bolton, and historians of the eighteenth and nineteenth centuries, "to illustrate the view taken by Historians at different periods of the Objects and Methods of History." The second consists of passages from the Anglo-Saxon Chronicle, Capgrave's Chronicle, Clarendon, Hume, Gibbon, Macaulay, Carlyle, and Gardiner, "illustrating the Method and Style adopted by Historians at different periods." They are well selected, and advantage is gained for comparison by choosing from Clarendon, Hume, and Gardiner passages bearing on the same subjects: Cromwell and the time of Charles I. The introduction is an able sketch of the history of history written in English. The subject is abruptly divided into two unequal parts by the exclusion of all writers in Latin, an exclusion which practically obliterates the Middle Ages. After five pages, devoted to the Anglo-Saxon Chronicle and Capgrave, Prof. Grant begins with Cavendish's *Wolsey* and Roper's *More*. Henceforward the story is continuous, grows fuller with the nineteenth century, and ends with a short discussion of the future of history. Until a history of history is written in full, a consummation devoutly wished by the author, such books as these will be profitable and interesting to all engaged in the teaching of the subject.

Britain's Sea Story. Edited by E. E. Speight and R. M. Nance. xiii.+427 pp. (Hodder and Stoughton.) 2*s.* 6*d.* net.—This book consists almost entirely of extracts from writers who have described the doings of our navy and adventurous marine from B.C. 55 until A.D. 1805. There is an introduction tracing the development of the structure of sailing-ships from the earliest times. There are also fifteen full-page illustrations, some pieces of poetry, and a chronological outline, which is, however, not used for the purposes of an index. The authors quoted vary from King Alfred and the writers of the Anglo-Saxon Chronicle to Hakluyt, Sir Walter Raleigh, Purchas, Dryden, and

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Southey. Such a selection makes excellent reading, and the book should certainly be added to the school library, and will be useful as an addition to the text-book. Some of the writers are unknown to us, and we could have desired a short account of these and of their trustworthiness. This might easily be added in a second edition.

Summary of English History. By N. L. Frazer. viii.+216 pp. (Black.) 2*s.*—This is a very good summary of the history from Roman times to the year 1901. There are fifty-three illustrations and twelve maps, and, besides the summary, a list of dates in Indian, colonial, and foreign events, a glossary, genealogical tables, a brief treatment of ten special topics (feudalism, parliament, government by party, &c.), and forty pages of biographies. The whole makes a good handbook for scholars whose teachers give their history lessons as they should be given—*viva voce.*

Main Landmarks of European History. By F. N. Dixon. 140 pp. (Clive.) 2*s.*—To tell the story of nineteen hundred years in 140 pages is a task which might tax the ingenuity of the best. Yet we must confess that Mr. Dixon has here successfully given us an outline of the main events. There is, of course, no room for more—and this, in the dearth of books on the subject, is welcome. There are five maps and an index.

Geography.

Atlas of the World's Commerce. By J. G. Bartholomew. (Newnes.) Part I., 6*d.* To be completed in 22 parts, issued fortnightly.—The first part of this really unique work appeared in the middle of March. The publishers claim for it that it is the first commercial atlas on a large scale that has appeared in the United Kingdom, and that, ere it is finished, it will include no fewer than 176 pages of coloured plates containing 1,000 maps and diagrams, to say nothing of a voluminous text. If the other parts are up to the first sample, the work should be especially useful to all teachers and students of commercial geography, especially if used in conjunction with a good physical atlas. This first part contains the title-page, the index of contents, the beginning (4 pages) of a gazetteer of commercial commodities, and two double-page coloured plates—each 15 in. × 20 in.—of maps dealing with the production and distribution of wheat and coffee. On the back of these maps are printed capital diagrams and notes. Coffee, for instance, is treated under such headings as general summary (*i.e.* its commercial geography), development in world production, total annual production, consumption absolutely and relatively, sources of the British supply, and rise and fall of prices. The chief drawback of all such diagrammatic treatments, when put in permanent form, is at once evident—statistics are so soon out of date. The wheat sheet supplies an instance to the point. According to the diagram showing the United Kingdom's sources of supply, the United States send us 43·5 per cent. of our total amount. The editor is careful to point out that this is computed on the average of the years 1901–3. But under another diagram, it had already been pointed out that the U.S.A.'s "rapidly increasing population will in time put a check on exportation." This is exactly what has already happened, and the 43·5 per cent. has, during the last two years, dropped to under 10 per cent. If students—and above all teachers—are prepared to watch statistics and keep them up to date, then this atlas should be one of their most valued possessions, and to all such we recommend the acquisition of the various parts as fast as they appear.

America. By Wm. Hughes. 129 pp. (Philip.) 1*s.* 6*d.*—This is one of the well-known series of Philip's Geographical Manuals brought up to date, more or less. Internal evidence points to 1901 as the date in question, though here and there, as in the case of the inclusion of the two new Canadian provinces and the note on the Panama Republic, new paragraphs have been inserted, or old ones rewritten. This up-to-date matter reads oddly beside such an old-time statement as that the Canadian Rockies "culminate in Mts. Brown and Hooker" of famous memory; one would almost expect to find that bison were still obstructing Westward-bound trains on the prairies—but the book is sound here at all events. So much information is contained that, we think, the work is more suitable for teachers or students cramming for an examination than for ordinary class-work. But the main defect is the absence of "causes and consequences." We are given, for instance, hundreds of names of towns, and a fact or two in connection with each, but seldom a geographical reason why they have developed where they are. And yet it is just here where a geography, to be educational, should be strongest. For the rest there are no illustrations, no diagrams, no index; to counterbalance there are three coloured political maps, which might just as well have been left for the Students' Atlases, and one curiously antique-looking black and white one of the Western World, the utility of which we entirely fail to grasp.

Highways and Byways in Oxford and the Cotswolds. By H. A. Evans. With illustrations by F. L. Griggs. 1–400 pp. (Macmillan.) 6*s.*—The series of which this book forms a link aims at giving the Arthur Young of to-day a helping hand. It is first a guide-book; then an itinerary; and lastly a mine of historical gossip. You cannot hurry with this book in your pocket. Starting from a Pisgah view of Oxford, the writer bicycles us *via* Woodstock, Banbury, Edgehill, and Brailes, through villages of unfamiliar names to Fairford, Ciceter, and Chipping Norton, and everywhere there is something to be told. County histories have been consulted, old stories are re-dressed, curious inscriptions are copied, churches are praised or abused according as the renovator has treated them reverently or renovatingly. The special note of the book is, we suppose, that it takes us to byways; for few can know the district so well as the patient bicyclist who has written about it. We should have liked more stories about Edgehill, and a little more about such places as Brailes (a fascinating church), and a large number of unimportant names might be omitted for some further yarns, ghostly and profane. But there are several good stories, and the numerous illustrations have not the fault, so common in expensive guide-books, of making places seem grander than they are. Indeed, Mr. Evans has not gone in search of the grand; he is contented with the picturesque.

Mathematics.

Elements of Descriptive Geometry. By O. E. Randall. v.+209 pp. (Ginn.) 8*s.* 6*d.*—In the preparation of this text-book great pains seem to have been taken to make the principles that underlie the various constructions as clear as possible. In many of the current books on descriptive geometry a rule, rather than a general principle, is laid down, and the apprehension of spatial relations is frequently far from perfect; in the general conceptions on which the treatment is based this book is distinctly sound, and the exposition is stated in simple language. In the course of the work a few of the simpler applications to problems in machine drawing, &c., are given, but in the

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main the book is a treatise on geometry introductory to practical treatises in which the principles and constructions are required. A student who has mastered the treatment here given is thoroughly prepared for all the usual applications.

Elementary Geometry. Books VI. and VII. By W. M. Baker and A. A. Bourne. 389–477 pp. (Bell.) 1s. 6d.—The earlier pages follow in the main the lines of Euclid's eleventh book—so far as that book was used in schools—and the treatment does not seem to be much better. The later sections give the simpler properties of the polyhedra and the mensuration of the usual solids. Though the book does not appeal to us as a specially good treatment of elementary solid geometry, it contains much useful matter clearly expressed, and will be found serviceable for school work.

The Theory of Determinants in the Historical Order of Development. By Thomas Muir. xi.+491 pp. (Macmillan.) 17s. net.—To anyone with the faintest interest in the history of mathematics—and the number of such persons is happily on the increase—this handsome volume will be a great delight. The subject-matter is, for a considerable section of the book, well within the range of readers whose mathematical attainments are not very advanced, while the gradual development of an important instrument of research is portrayed in language of singular clearness and simplicity. The intrinsic interest of the theory is strikingly shown by the long array of mathematicians who have been attracted to its study; there are few of the mathematicians of the first rank who flourished in the eighteenth and nineteenth centuries whose names are not to be found in connection with some development of determinantal theory, and none who has not made extensive use of it. The reader can commit himself with absolute security to Dr. Muir's guidance, and, while studying this volume, he will learn much more than a knowledge of determinants; he will gain some insight into the vast field of mathematical research, and will be brought into touch with many of the greatest minds that have contributed to the progress of mathematics.

Test Papers in Elementary Mathematics. By A. Clement Jones and C. H. Blomfield. viii.+248 pp. (Edward Arnold.) 2s. 6d.—The object of this work, as stated in the preface, is to provide a graduated series of test papers on the mathematical work of the lower and middle forms of secondary schools. So far as can be judged by inspection, the papers have been drawn up on very sensible lines; the questions are sufficiently varied, and they are not too difficult. The collection includes a large number of examination papers set by various examining bodies, and this feature should prove very valuable to teachers.

A New Junior Arithmetic. By H. Bompas Smith. x.+222 pp. (Methuen.) 2s. 6d.—This book is drawn up on sensible lines and is not overloaded with examples, though these are given in considerable number and variety. We are in cordial agreement with the remark in the preface that "the movement in favour of oral teaching may be carried too far"; as pupils advance in their studies they should, we think, be gradually trained to master the text-book without much direct aid from the teacher. As the fashion runs at present, the pupil is kept too long in leading-strings.

A Shilling Arithmetic. By S. L. Loney and L. W. Grenville. xxiv.+186 pp. (Macmillan.) With Answers, 1s. 6d.—This book is written on the lines of Mr. Loney's well-known "Arithmetic for Schools," though simplifications, suggested by experience in school-teaching, occur in many places. Ample provision is made for all kinds of school work.

Blackie's Model Arithmetics. Three-term Scheme "B." In script figuring. Book II., 48 pp. Book III., 48 pp. Paper covers, each 2d.—These books cover the work of Standards II. and III. respectively; the exercises are numerous and simple and the type is exceedingly plain.

Science and Technology.

Elementary Treatise on Physics. Translated from Ganot's "Éléments de Physique" by the late Prof. E. Atkinson. Seventeenth edition, edited by Prof. A. W. Reinold, F.R.S. xi.+1169 pp. (Longmans.) 15s.—"Ganot's Physics" has been for more than a generation an old familiar friend to students of natural philosophy. From it many of us obtained our first broad view of the realm of physical science, and the precise methods by which principles have been established and constants determined. The classical experiments of Regnault, Dulong and Petit, Laplace and Lavoisier, Arago, Cailletet and Pictet, Foucault, Fizeau and Fresnel are associated in our minds with the treatise of which the seventeenth edition is now available. To these investigations and many others of a like kind which laid firm foundations for scientific progress in the nineteenth century the gift of immortality is given, if not the appearance of perpetual youth. Prof. Reinold has restored very successfully the parts of this fabric which showed signs of weakness or decay in the light of new knowledge; so that while the general character of the volume remains unaltered, new material can be found on nearly every page. Dewar's low-temperature work, radioactivity, colour photography, water-tube boilers, Hertz's experiments, wireless telegraphy, and the phonograph are examples of new subjects introduced in their appropriate places. The revision has been thorough, and the result is satisfactory in every respect. The new wine has been put into the old bottle without bursting the skin; and we believe that a draught of it would refresh the spirit of any student of physics who has been depressed by the concentrated juices usually provided by school text-books. Every school in which elementary science is taught should possess the book, and the student who acquires a copy will find it a faithful help in scientific study.

The Student's Hygiene. By Ernest Evans. xiv.+309 pp. (Swan Sonnenschein.) 3s. 6d.—We gather, both from title-page and preface, that this book is mainly intended for students working through the Stage I. syllabus of the Board of Education; but the greater part of the work seems to be much above this standard of difficulty, and to be quite unnecessarily detailed and technical. As a work of reference for more advanced students, however, it will be of considerable service. Great prominence is given to practical work, but the instructions for dissection and experiment are in many cases too vague to be of much help to the beginner. An instance of this may be quoted from p. 32:—"Find the portal vein, cut it open, and follow it into the liver, noting how it branches." This is, we believe, the first time the portal vein is mentioned. Again, on p. 132 we are told "how a standard soap-solution can be made." Merely to carry out the instructions would be no easy matter, and the solution when made—in this way—would be useless. It must be admitted that few of the experiments prescribed are quite so unfortunate as this, but many others need strenuous revision. In spite of such flaws the book has many admirable features which will commend it to discriminating readers. The sections on Food, Diet, and Cooking especially merit praise.

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Elementary Science: Plant and Animal Life. By W. S. Furneaux. viii.+157 pp. (Clive.) 2*s.*—This book has been written for the use of candidates preparing for the "Preliminary Certificate" examination of the Board of Education. About one-third of the space is allotted to the part of the syllabus dealing with animal life. This portion, though commonplace in treatment, is on the whole trustworthy. The rest of the book, on plant life, contains many mistakes. Perhaps the most serious of these, occurring no less than five times, is the astonishing statement that chlorophyll has the power of decomposing carbonic acid gas. After this, one is hardly surprised by the relatively minor errors and slips in the book. Of these may be mentioned the statements that the epidermis of the male-fern leaf contains no chlorophyll, that poplar flowers have "only one or two" stamens, and primrose flowers only one carpel. The nucellus of an ovule is called the "nucleus," and there are references to the "pith" and the "vessels" of the male-fern stem, which possesses neither. Again, in the description of the yeast plant we are told that sugar "does not provide material for the construction of protoplasm, since it contains carbon, hydrogen and oxygen only . . . the sugar provides only the energy of the organism." Such statements as these make it impossible for us to recommend the book in its present form, especially considering the purpose for which it is ostensibly written.

Northern Trails. By William J. Long. xxvi.+390 pp. (Ginn.) 7*s.* 6*d.*—In this, the latest volume of his delightful animal studies, Mr. Long breaks new ground, and describes in his own inimitable manner the results of his studies of "white wolf, fisher, salmon, wild goose, polar bear, and a score of others big and little" in the mountains and woods and salmon rivers and mossy barren grounds of Labrador and Newfoundland. Mr. Long's peculiar charm lies in his finding in the greater part of an animal's life—playing, working, seeking food, making dens, outwitting other animals, avoiding traps and enemies—evidence, not of a blind instinct, but of a very wide-awake intelligence. The result is that the reader gains a vivid, and often a startling, impression of the animals' personalities. The method has recently been challenged very vigorously, and Mr. Long defends the accuracy of his statements and interpretations in a lengthy and extremely interesting preface. "To call a thing intelligence in one creature and reflex action in another, or to speak of the same thing as love and kindness in one and blind impulse in another, is," he says, "to be blinder ourselves than the impulse which is supposed to govern animals." This view may not commend itself to those who see in a wild animal only something to be killed, but it will appeal to all true naturalists. Mr. Long's books have a distinct scientific value, but they will be read chiefly for the unflagging interest of the narrative and the great charm of their literary style. "Northern Trails" is nearly—or quite—as good as "School of the Woods," and we could scarcely give it higher praise. It should be mentioned, finally, that Mr. Charles Copeland's illustrations also are as good as ever.

Our School out of Doors. By the Hon. M. Cordelia Leigh. xii.+141 pp. (T. Fisher Unwin.) 2*s.* net.—This book furnishes a capital example of what may be called the incidental method of nature-study, and for quite young children this method is probably the best. The twenty-four reading-lessons treat of what might be observed during a country walk taken twice a week for a year. Although the lessons are not in any sense crowded with facts, they manage to convey an astonishing amount of information. At the ends of the lessons are particularly useful sets of questions to be answered. The book may be strongly recommended.

Miscellaneous.

Voice Production and the Phonetics of Declamation. By J. C. Newlands. 128 pp. (Oliphant, Anderson, and Ferrier.) 2*s.* 6*d.* net.—This is an excellently printed book, with nice large type, large margins, good stout paper, and a pretty binding. As for the matter, it is perhaps less satisfactory. We do not doubt that Mr. Newlands can point to gratifying success on the part of his pupils; but he, like almost every other teacher of elocution, fails to be convincing on paper. Repeatedly the writer addresses an imaginary hearer, admonishes and corrects him; if instead of this we had a dozen pictures showing, for instance, what Mr. Newlands considers the correct position of the speaker's body, it would have been more helpful. The importance attached to good breathing and the advice given on this subject are to be commended; but such statements as "the concentration of vocalisation should be on the upper part of the chest" are not very lucid; and personalities are best avoided—there is not much value for the majority of readers in the remark that "a want of resonance is to be found in the preaching voice of Canon Gough." How do we "lift the breath off the vocal bands"? What is the meaning of the symbols on page 79? What is the difference between the exercise on page 82 and that on page 83? What is the breathed *r* "common in the South of England"? Is *ch* in *church* a single sound? What is a "contractile movement"? From a scientific point of view the book has little value; of phonetics there is very little, and even that must be accepted with caution. When will teachers of elocution condescend patiently to study speech as it is, before they dogmatise on speech as it should be?

A New Interpretation of Herbart's Psychology. By L. Davidson. 1–191 pp. (Blackwood.) 3*s.* 6*d.*—This extended thesis is a defence and an explanation of what the author thinks was Herbart's position. Morality is knowledge: education is morality, and the teacher's business is to impart right knowledge in the right way. The good will, from which morality comes, is only desire *plus* a supposition of attainment: desire being the result which is the balance of presentations, and presentations being the only influences that can affect the colourless soul. If this is all granted, then education is an apperceptive many-sided interest roused through educative instruction, *i.e.* instruction which is the training of the heart and will. There is no doubt that all of it seems easy; that we know well enough how habit can be overcome by habit, and that environment can accomplish (sometimes) the miraculous. But the ordinary reader will be beset by the whispers of "heredity," "apparently ingrained evil," "physiological unfitness": and before these whispers the louder and longer words sink into weary silence. Neither Herbart nor Leibnitz satisfies the practical world: and physiology has yet to have its say. Thus to the everyday teacher the book before us has an academic interest; by its rules he ought to be able to produce a St. John or a murderer at will. As a matter of fact, he can be absolutely certain of producing neither. And at present all psychologies fail us.

Lectures to Teachers on the Prevention of Infectious Diseases. By W. Berry. 1–64 pp. (Bristol: J. Wright.) 6*d.*—This useful little book is a reprint of five lectures by a medical officer of Wigan; it incidentally pleads for something more than the haphazard hygiene instruction now recommended to, but not enforced on, teachers in schools.

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CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The New Association of Teachers of English and Others.

Though there are already numerous "subject" associations, another was formed on April 28th, at the University of London, for promoting the study and teaching of the English language and literature. There is considerable agreement that further organisation for this end is greatly needed. Of recent years much attention has been directed to English through the efforts of the Board of Education, the Modern Languages Association, and individual men and women specially interested. Publishers, too, have lent ready support. But the efforts have been largely uncorrelated, with the result that in many instances they appear to have died out. It is just this correlation and continuousness that it is hoped the steady pressure of a specific association will be able to furnish.

There has been undoubted progress in raising the standard of English and in improving the methods by which it is taught, yet to this day (particularly in many boys' schools) the subject is held in low estimation. Several speakers at the meeting emphasised this fact, and pointed out that English was either omitted altogether from the curriculum or frequently entrusted to the least competent members of the staff.

Its affinities with other subjects will be granted by everyone. Opposition will hardly be offered to the contention that the classical master may well supplement his examples of the finest characteristics of Greek and Latin authors, probably appreciated only by a few, with similar characteristics from the best English literature, certain to be appreciated by many more; that the teacher of modern languages may use it serviceably by way of comparison and translation; that the pupil is better prepared for the study of science if he possess the power of clear expression without the knowledge of a smattering of chemistry than if he come armed with this knowledge ill digested, ill arranged, and ill expressed; or that the study of history has in its humanistic aspect matter inseparable from what is best in our literature. Few will hold these things to be contentious. What is highly contentious is to assert one of these affinities to the exclusion of the others.

But in all these cases, with the doubtful exception of the last, the employment of English, though serviceable, is subsidiary. The subject is not regarded as ranking on the same level with those it assists. Its position is therefore not of equal honour. Yet it is precisely this equal professional estimation for English that is its peculiar need, if a due percentage of teachers (in boys' schools at any rate) are to make it their special study, and if those who devote themselves chiefly to other subjects, but who, from the exigencies of the time-table, are compelled to do English work, are not to regard it as of merely a perfunctory character.

Of course the claim for equality of honour must be based upon equality of service. Can English render service to education as valuable as that rendered by the classics or by modern languages? I think it can. Some may find this service in the mental discipline of the essay, in the intellectual value of the power of clear and connected thought wedded to clear and representative language. Others again may find it in the direction of scholarship and all that scholarship implies. This is good work, but it is, after all, chiefly critical, and therefore does not differ in essence from the bulk of work done in schools, in whatever subject. But is not the appeal of our literature to the emotions, its aid in suggesting higher standards of taste, in brief, its æsthetic service, of greater value still? Other subjects in their degree, notably history in its earlier stages and classics in their later, make the same appeal, but none make it so continuously nor with such directness and ease. And just because the spirit of the age is on the whole materialistic, it is important to assert the value of this particular service which English literature can render so effectively, because so naturally. If this contention is true, and English literature does readily supply to education an element of great value, and one not so readily supplied by other subjects, there is every justification for going to the length of forming yet another association, since that is perhaps the best way of trying to secure that a good element is supplied on a national scale.

Since the suggesting of taste evades mechanical treatment, the reading of English literature in schools should be entrusted to skilful and cultured men and women, who are not necessarily specialists in English, but who wish to do this work. We are told there is a deficiency of such men and women. The deficiency is likely to last so long as the subject is held in low estimation. To raise it in professional estimation will require sustained effort on the part of those who love it. The effectiveness of the effort will probably vary with the number of teachers of English who engage in it—hence the necessity of local organisation, which will be the more useful as it is the less formal—and with the sustained value of the effort they make—hence the necessity of central organisation of formal character, representative, so far as may be, of local effort. It is hoped that the new association will supply this needful binding force. Of such an association the teacher is undoubtedly the heart. For this reason the constitution should be such as to permit teachers of all grades, not merely to join, but to render active assistance. At the same time, if it is to do lasting service to a subject in which æsthetics and scholarship play so large a part, the presence of the scholar and of others who love English letters becomes not only welcome, but essential. Already their help has been freely given. It is not easy to underestimate the value of the influence they are bound to exercise.

Subject associations have done, and are doing, a great deal for the improvement of methods of teaching. Their great drawback is their multiplicity, with its excessive demand upon driving power. But after all this is only a difficulty, and therefore not insuperable. Opinion is tending to the direction of federating these societies, and once it has become sufficiently general the task should not be impossible to fashion the requisite machinery.

Liverpool. G. E. S. Coxhead.

Is School Science Worth Having?

In Prof. Armstrong's article of last month's School World we have a criticism of science teaching in schools no less trenchant than it is suggestive, and I would beg to express my thanks to him and to you for the opportunity it affords of discussing the position of science in schools at the present time.

His question is one for headmasters and governors, as well as for science masters. It is for them to decide whether school science shall be worth having. Conditions of work largely determine the methods practicable. We have asked, almost in vain, for enlightened treatment. Scarcely one headmaster in a hundred has the remotest

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idea of the meaning of an experiment in the scientific sense, let alone the conditions necessary for such.

We who have worked, and watched the young student at the bench, and understand the active mental attitude that is possible if the work is properly directed, can speak without hesitation for the incalculable value of school science. We are sure that, under suitable conditions and intelligent direction, it has not its equal for developing truthfulness, self-reliance, and sound judgment. Besides, as Prof. Armstrong says, the opportunities the work affords for literary and mathematical co-operation are unique, and should appeal to the educational instincts of every administrator of our public schools.

It is not a question of laboratory accommodation, which is often very good, but a question of educational policy within the school. If straw is not allowed, what is the good of blaming the maker if the bricks are bad? The best seed may be sown, but if the right conditions of growth are withheld one does not feel surprised to see a sickly plant.

The failure must also be partly attributed to the fact that school science is hardly out of its infancy, and its inexperience in the domain of educational work has led to imitation of the ways of the ancients, and to putting up with conditions of work totally unsuitable for its development, with the natural consequence of a somewhat distorted growth. We must acknowledge that our foundations in teaching have not always been well and truly laid. Too much thought has been given to piling the bricks up, and too little to the manner in which they fit in with what is below and around. Bricks of science—facts of science—have been piled up, and in any order, while the sciences of design and stability were ignored. We are beginning to see that it is not our province so much to build an edifice of scientific fact and theory as to lay the foundation of good habits of work, observation, and reflection.

The acquisition of a power to build for himself is more important to the youth than any information we can give him or books can supply. Naturally, in the process of forming this foundation much is done that covers common ground, in whatever direction the work may develop later, and facts are met with that are useful in themselves; but I would plead that the actual bit of science work done is of less importance than the manner in which it is done. The emphasis must be laid on the attitude of the worker to his task, and the thoroughness with which he grasps the motive and object of his investigation. The facts of science then take their proper place, and a text-book becomes a means of verification, of reference, supplementing actual experience, and not studied as something inspired or written by folk of superior wisdom, and above criticism.

Sixteen years' experience of science teaching enables me to speak hopefully of science work in secondary schools. The extraordinary change that has taken place in our laboratory methods all over the country in so short a time—a change that has been progressively towards the true scientific method—should promise well for the future.

Here, at Christ's Hospital, we have greater opportunities perhaps than anywhere else of conducting the work on heuristic lines, and though we have many cramping conditions that spoil our plans, the four years' experience has been encouraging and convincing.

CHAS. E. BROWNE.

Christ's Hospital, West Horsham.

"No; never! Well, hardly ever!" to quote Prof. Armstrong. I write as one who has taught school science for many years in all sorts and conditions of schools, from a first-grade London public school down to an army-cramming establishment on the South Coast. I have heard all manner of charges levelled against it, as a rotter of clothes and a destroyer of test-tubes; but it has been left to the great protagonist himself to deal it the severest blow of all.

Wherever science is taught to-day Prof. Armstrong's name will be dragged out by the enemy as giving the crowning evidence of the failure of our subject to justify its existence, and, moreover, as asserting the positive harm it is doing to the morals of our boys. Like Socrates of old, we are accused of perverting our youth!—Socrates himself says it. I wonder if Prof. Armstrong has realised that, in the hands of many principals, his tirade may be used as an excuse—and a justifiable one—for further cutting science time. What answer will the unfortunate master give when he is confronted with the name of one who, rightly or wrongly, is held by the man in the street to be an authority in educational matters? The first thought that occurs to me after reading through the remarkable statements of Prof. Armstrong is that he has been singularly unfortunate in his students. It is a matter of some interest to me personally to find that I have been aiding and abetting in supplying boys who are dishonest, who have no initiative, who know not how to experiment, and who—final sin—have not made dozens and dozens of density determinations. I should imagine that the greater part of his dishonest students came from institutions where the gospel of

"Weigh, weigh, weigh"

had been preached and practised *ad nauseam*, and where the new subject "Armstrong" had displaced the older fashioned chemistry.

It is of interest also to find that our teachers of chemistry are incapable of conducting an experiment, and that they have never been taught so to do.

Where are the professors of chemistry? Is Exhibition Road the Mecca of Usherdom, and can no good come out of Gower Street and the provinces?

Verily must we gird up our heuretic loins and say Go, hang.

I am treading on delicate ground when I treat of text-books—being a sinner. I quite agree that in the heuretic paradise no text-books should defile the presence, and further, that in all decent laboratories every boy should be his own author. But from the point of view of one who stands outside the gates of heaven, and for his sins is compelled to pass boys through all sorts of examinations, is all this practicable? No! for the heuretic teaches his thousands and we our tens of thousands. With a class of four I would heurise an I were an Armstrong—but with forty!

The ordinary average experimentally-incapable science master wants some sort of text-book to clarify the ideas of his boys—for revision—for home work—for the boy who wants to read ahead. He finds it useful, maybe because it gives some hints of what other less experimentally-incapable men have done in their classes. If he is a wise man he keeps a supply of them, because he can pick up useful tips from them. They are as useful and necessary to him in everyday school science as a Latin grammar is for his colleague.

Let any science master think of the hundreds of boys who have passed through his laboratories, their keenness, and their interest in a subject which stands out in their school life so brightly relieved from class-room drudgery.

Let them think of the chosen few—and what master

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has not influenced some of these with his own spirit?—who leave them with the fixed idea of themselves becoming pioneers in our glorious science. Can they then doubt that school science has been a success?

A. E. Dunstan.

(Formerly Science Master in Owen's School, Islington.)
East Ham Technical College.

As Prof. Armstrong's very interesting and instructive article on science work in the May number of The School World may give rise to considerable correspondence, I would like to confine my criticism to one statement from which I feel compelled to dissent.

The value of science as a factor in mental training is now so generally recognised that further emphasis is needless; but how can we confidently make an assertion such as this:—"*We know* that our subject may be made the means of affording . . . moral training of higher excellence than can be given through any other branch of school work"? The moral training that science gives, where discipline is properly enforced, seems to me to have very much in common with that developed by some other subjects in an ordinary curriculum. Thriftiness, neatness, truthfulness in observation, are important elements in forming character, and the last is essential. But (1) it is open to question whether the accuracy acquired in laboratory work need improve a boy's accuracy in totally unallied subjects. Can we answer with certainty what will be the effect of training one special function of the brain upon all the other functions? (2) Still less can I grasp the implied assertion that such training can be made a foundation for the truthfulness required of boys in their ordinary social relations. Yet this, and much more, are included in moral training. Can science, like history, treat of those motives of human action, touch those springs of conduct, expound those principles of life, which lead the young mind insensibly to form its ideals and frame its patterns from nobler and richer examples, untouched in the process by motives of self-interest, in the effort to obtain a result or win approval? Can all that we require in character be formed by an inductive process of experimental research, however well directed? Perhaps I read more into the phrase "moral training" than Prof. Armstrong intends.

F. Brett.

Cranleigh School, Surrey.

In reading the article by Prof. Armstrong in the May number of The School World most science teachers, I think, must have been alternately irritated and puzzled with the arguments used by the writer to prove his thesis. A closer inspection of these arguments, however, would show that beneath the *saeva indignatio* displayed in inveighing against modern scientific teaching there is a genuine desire to remedy the defects in the present system. Unfortunately, the influence that might have been produced by Prof. Armstrong's indictment will be considerably discounted by the want of sympathy shown to teachers, who have a right to expect better treatment from one who has taken such a prominent part in laying the foundations of scientific instruction.

It is perhaps only fair to concede to Prof. Armstrong the existence of "obnoxious cookery-book recipe methods" in certain unprogressive schools—the system of scholarship examinations will account for this to a great extent.

A slight acquaintance with the work of a modern secondary school would show clearly to a careful observer that the dark days of science teaching have almost passed away, and that more enlightened methods are being put into operation. The old "cramming" methods were neither justified by expediency nor were they conducive to mental discipline.

Under the Education Act of 1902, secondary schools have at last secured a charter of liberties never possible under the old *régime*, and science teachers will fully appreciate the concession of a four years' course of instruction drawn up without any obligation to send in pupils for examinations, except in the case of leaving examinations.

The pupils brought up under this arrangement are not likely to reach the technical colleges and universities for a year or two, but I am convinced that Prof. Armstrong will be agreeably surprised at the mental calibre of such students. Coupled with the improvement in science teaching, one is glad to note the enthusiasm with which new methods are applied to the instruction in mathematics, modern languages, English, and (recently) geography.

The claim of science to be considered the only interesting subject to pupils, because of the practical work, is being strongly contested, and a friendly rivalry between the different teachers produces a keen desire to adopt original and more interesting methods.

The wish of Prof. Armstrong has already been fulfilled, and the teacher is compelled to leave his chair and to deal with practical lessons. The criticism that the teacher is deficient in actual experimental knowledge is distinctly inaccurate, and fails to take account of the increase in efficiency of university teaching.

The fact that large sums of money are now spent on the equipment of laboratories for the highest scientific investigation clearly shows that the universities recognise the necessity of sending out teachers adequately equipped and properly trained in experimental work.

Whilst disavowing any intention of teaching pupils to be "blatant dogmatists," most of us would be delighted to see that our efforts have made them capable of giving reasons for the faith that is in them—even though these "babes and sucklings" may have recourse to "technical jargon," which, I take it, means clear scientific terms. On this point Prof. Armstrong's pistol appears to have missed fire, and he has been obliged to use the butt end of it. Putting on one side his puzzling paradoxes, which would delight the heart of George Bernard Shaw, let us examine the recommendations which are to give science teachers one last chance to be saved.

The first golden rule that Prof. Armstrong puts before us is "that the pupils must understand what they are doing," *i.e.* the aim of the scientific experiment must precede the method of carrying it out. I agree entirely with this statement, because a pupil who is asked to perform experiments without being instructed as to their direction will soon lose interest in the subject and degenerate into a machine for registering well-known facts. The second rule, "that the lesson must be driven home," is hardly likely to be overlooked by a conscientious teacher; nothing but repeated drilling in the results of the lesson will eradicate the fatal tendency to mental slackness on the part of the pupil.

With regard to the development of alertness, Prof. Armstrong points out the vice of "spoon-feeding," and hurls his heaviest invective against practical text-books—"those wretched subterfuges which act as mental drugs."

As the author of one of these anodynes written to soothe the nerves of teachers and pupils, I am aware that everything I say in their favour will be received with suspicion. It must be admitted, however, that if a teacher has spent considerable time and trouble in working out original experiments, it may perhaps be beneficial that he should

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share this knowledge with other teachers who do not possess the same leisure or means at their disposal. The capable science instructor will always use the text-book judiciously, and alter it to suit his own requirements; to use such a book slavishly is a confession of weakness, and would be detrimental to teacher and pupil alike.

Most educational experts are of the opinion that, while the correlation of studies is an important factor in the success of a school, it is not a wise policy to have a number of teachers who are Jacks-of-all-trades; avoiding the danger of water-tight compartments, the specialist will teach his subject with a greater amount of care and enthusiasm, always regarding his subject as an atomic force possessing bonds capable of affinity with other subjects.

To follow out Prof. Armstrong's idea to a logical conclusion it would be necessary to revive the old dame school system, in which there was a correlation of studies centred in one person, or to copy the Gilbertian idea of a set of pædagogic Pooh-Bahs. Science teachers will not be disheartened by the pessimistic forebodings in the professor's article—nay, if they will take to heart his stern lecture and acknowledge that they have been reprimanded and dismissed with a caution, they may be spurred on to fresh efforts in the endeavour to disprove the verdict.

Notwithstanding the protestations of regard for the future of science teaching, most of Prof. Armstrong's readers will fail to trace any sign of friendship underlying his statements, and the eloquent appeal of Hood's heroine would probably express the resultant effect:—

"It is all very well to dissemble your love,
But why did you kick me downstairs?"

E. S. A. ROBSON.

Warrington Secondary School.

Programme of the Educational Section of the British Association.

As the British Association meets this year at York on August 1st, it will be more convenient for many engaged in teaching to attend the meeting than in previous years. The organising committee of Section L has recently considered the provisional programme for the meeting, and is of opinion that the balance of subjects in the curricula of schools of all grades constitutes a problem of which an early solution should be attempted. It has, therefore, been decided to devote the principal sessions of this section to *school curricula* and allied questions, such as the training of teachers and the inspection and examination of schools:—

Thursday Morning, August 2nd.—Presidential Address by Prof. Michael E. Sadler. *Friday Morning, August 3rd.*—"The balance of subjects in the curriculum of the primary school, and the nature of the training necessary for teachers in such schools." *Monday Morning, August 6th.*—"The balance of subjects in the curriculum of secondary schools, and the nature of the training necessary for teachers in such schools." *Tuesday Morning, August 7th.*—"The inspection and examination of primary and secondary schools."

On these mornings the discussions will be opened by short papers. The afternoon sessions will be available for the discussion of subjects other than those indicated in the above outline, and it is hoped that members of the Association desiring to communicate papers will give notice of their intentions to the organising committee at the earliest possible date. As the pressure on the time of the section is likely to be great, it is hoped that papers will be short and to a definite point, in order that they may be discussed adequately. The conditions under which papers may be communicated to the British Association will be found in the prospectus of the meeting, which can be obtained from the sectional secretaries or at the offices of the Association. Offers of papers should be accompanied by short abstracts, which, if accepted by the committee, will be printed; these should be addressed at an early date to Prof. R. A. Gregory, 10, St. Martin's Street, London, W.C.; to Hugh Richardson, Esq., 12, St. Mary's, York; or to the undersigned,

W. MAYHOWE HELLER (Recorder Sect. L).
40, Upper Sackville Street, Dublin.

The Production of Artificial Speech Sounds.

I AM not surprised to hear that Dr. Rouse has found the phonograph useful, and I welcome his article pointing out how it may be utilised even for the teaching of Greek and Latin. The phonetician will look forward with keen interest to the Greek and Latin records which have been promised. By helping to popularise the reformed pronunciation of these languages they will do a useful and much needed work.

If I spoke disparagingly of Mrs. Frazer's records, it was not done because I thought them altogether worthless. I was, indeed, aware that they had been used for some time at the Perse School, which afforded strong presumptive evidence that they were of real value. It was only when I actually heard them, and was able to compare them with moulded phonograph records and with the gramophone records which had been made under my own direction, that I felt bound to express my regret that they were not better, and I ventured to suggest that the results would be more satisfactory if the records were multiplied by a method different from that evidently employed.

That the selection of passages recorded was an excellent one I acknowledged with pleasure. I cannot, however, agree with Dr. Rouse that the records should necessarily be made by "persons who are actually engaged in class-teaching, or are in close touch with schools." Let them select the passages and supervise the making of the records; but in choosing a voice for the purpose, the chief consideration is surely whether it is well suited for reproduction, and not whether its owner is "in close touch with schools."

To conclude with a word of warning: those who believe that talking machines will "help less competent teachers" are more sanguine than is safe, and their words may lead the "less competent" or their headmasters into the very serious error of thinking that the talking machine will make up for ignorance of phonetics. For teaching the articulation the sound-chart will always be ten times more valuable than any machine. Dr. Rouse is fortunate in having on his staff such a skilful and highly-trained expert as Mr. von Glehn, who was obtaining excellent results long before the phonograph was introduced into his class-room, and who is able to use it to the best advantage. Changing a sentence in Dr. Rouse's article, I am inclined to say that there is a use for the records *only* in those schools which have good teachers.

WALTER RIPPMANN.

A Safety Pipette for Chemical Laboratories.

THE fatality which occurred last month at the Technical School, Plymouth, shows us that an occasional accident will happen in a chemical laboratory, despite the greatest care on the part of the laboratory master. I have read the

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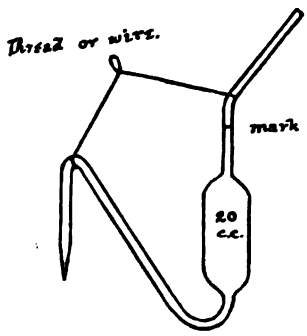
admirable article on "Accidents in Chemical Laboratories" by Mr. R. L. Taylor which appeared in the May issue of The School World, and venture to suggest that the use of pipettes for the measurement of dangerous liquids need not be entirely abolished. I enclose a sketch of a safety pipette which can be easily constructed from an ordinary straight pipette. The sketch explains its construction, three bends only being necessary. In the case of a known volume of some dangerous liquid being required (*e.g.* caustic soda solution), the jet end of the pipette is placed in some of the solution contained in a beaker, and gentle suction applied at the other end. The pipette then fills automatically by syphoning. By raising or lowering the bulb of the pipette —still keeping the jet end underneath the liquid in the beaker—it is easy to adjust exactly the meniscus of the liquid at the etched mark of the pipette. This operation is carried out much more easily and expeditiously than with the straight pipette. The jet end is now held over the vessel into which the liquid is to be transferred, and the last drop is secured by first placing the ball of the forefinger tightly over the mouth of the pipette, and then placing the hand round the bulb. The heat from the hand expands the air in the bulb of the pipette, and consequently drives out the last drop. The pipette in this form may also be used as an instrument for determining the densities of liquids. It is only necessary to attach a piece of thread or wire, as in the diagram, in order to hang the pipette to the hook of the balance. When slightly tilted in this manner, all the liquid remains in the pipette. With several pipettes of this kind in the laboratory, such accidents as the one already mentioned would be avoided.



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On revising "Blackie's Latin Texts" I have found a number of misprints, quantity marks being omitted. These are, of course, being corrected on the plates, and I should be grateful if those who use the texts would send me any such misprints which they may find. I do not, of course, ask any indulgence for these, but I may say for those who have not done similar work that the labour is very great, and that the eye refuses to act after a very short time. All the texts have been worked through by two persons, and some of them by three.

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Summer Meeting of the National Home-Reading Union.

Leamington and Warwick have combined this year to offer to those who can spare ten days at the end of June an intellectual holiday of unusual interest. The attractiveness of gatherings at which lectures are delivered and excursions arranged is well understood on the other side of the Atlantic. Last summer more than a hundred thousand persons attended "Chautauquas," as they are termed in America, at some hundred different centres. I doubt if anywhere out of England there is to be found a centre so fascinating as the heart of Warwickshire. Every day during the week which commences on July 1st an historic pageant on an altogether unprecedented scale will be enacted in the grounds of Warwick Castle.

With the view of preparing the minds of intending spectators of this great folk-play, and giving them the opportunity of turning their visit to Warwick to the best account, the National Home-Reading Union has arranged to hold its summer assembly at Leamington from June 23rd to 30th. The opening address will be given by Dr. Butler, Master of Trinity; and during the week lectures will be delivered by Prof. Oman of Oxford, Dr. Sidney Lee, Mr. F. R. Benson, Mr. Yardley, Prof. Stirling of Manchester, Principal Childs, Prof. Sorley of Cambridge, Prof. Hillhouse of Birmingham, Miss Simpson of the University of Leeds, Mr. Louis Parker (Master of the Warwick Pageant), and others.

It is impossible in a letter to enumerate the subjects of all these lectures, but most of them will be inspired by the *genius loci*. Prof. Oman will take "Warwick the Kingmaker," Mr. Benson "Shakespeare and the Resurrection of the Dead," Principal Childs certain historic episodes connected with the district. Excursions will be made to Stratford-on-Avon, Coventry, Compton Wynniates, and other spots of surpassing interest and beauty. The assembly is open to all on payment of a small fee. Programmes may be obtained from the Secretary, N.H.R.U., Surrey House, Victoria Embankment, London, W.C.

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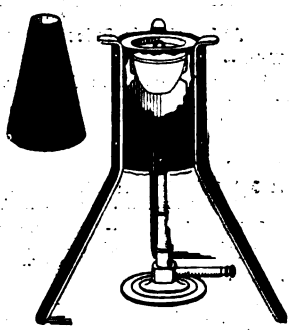

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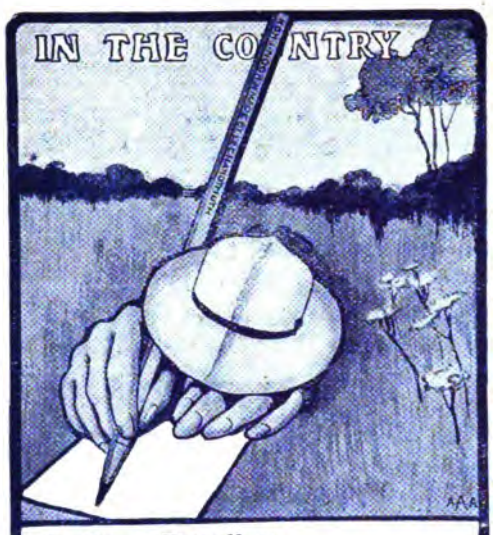

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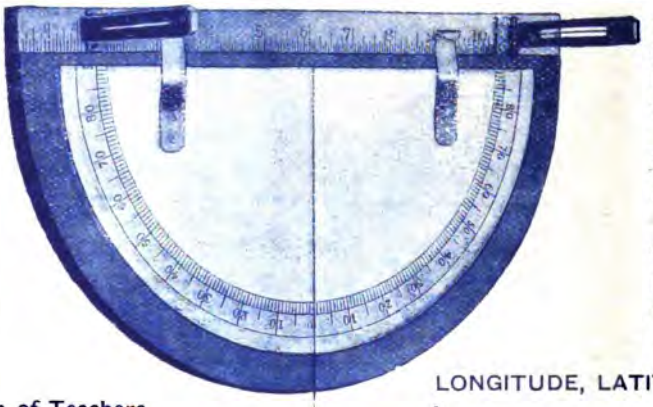

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The School World

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THE PROPOSED ABOLITION OF THE TEACHERS' REGISTER.

By A REGISTERED TEACHER.

THE proposal of the Board of Education to free itself from the statutory obligation to frame and keep a Register of Teachers has evoked a series of protests, the number of which has probably astonished the responsible officers of the Board. About the proposal itself there is an appearance of haste which is neither dignified nor satisfactory. The Board, it would seem, was in too great a hurry to take the opinion of its proper advisers. Indeed, to the Consultative Committee some injustice has been done. In the President's letter announcing the Board's decision the support of a majority of the committee was claimed for that decision. Yet in the sequel the committee has gone as far as was possible in disclaiming responsibility. Moreover, the two distinguished ladies whom alone Mr. Birrell seems to have had time to consult have publicly dissociated themselves from the views he attributed to them.

Nor has the Registration Council fared much better. A single phrase in the last report—"under existing conditions it is not practicable to frame and to publish an alphabetical register of teachers such as appears to be contemplated by the Act of 1899"—has been put forward so prominently by the Board as a *pièce justificative* that even the experts may be pardoned for thinking that the "whipping boy" is the real culprit. Read in its context the phrase seems to refer to some domestic pother as to who should pay for entering the names of teachers in Column A on "the official cards." Whether that be so or not the Council is evidently satisfied that the present conditions need not be eternal, for it has published its regret that the Register is to be abolished instead of reconstructed, and has asked that sentence be postponed "until further steps have been taken to ascertain the possibility of framing a comprehensive Register of Teachers more generally acceptable to the whole profession."

Finally, the Board itself has been very ready with assurances that the assistance it is going to give for the training of secondary-school teachers will accomplish all, and more than all, that the Register could ever accomplish, though "the kind of training to be required and the institutions in which it should be received are matters on which the Board are not yet in a position to lay down any definite rules" (*Regulations for Secondary Schools: Prefatory Memorandum, May 22nd*, 1906). Having made up one's mind, or, as the Board would prefer to put it, having recognised the inevitable future, it is, of course, well to make out as strong a case for one's prescience as possible. Still, the hasty, and, of course, unintentional attribution to responsible persons and committees of views which they do not accept, and the employment of arguments, the measure of which is as yet uncomputed, are disquieting signs for those who look to the Board to be above prejudice and party, who expect its decisions to be taken deliberately and for incontrovertible reasons.

In order to appreciate the grounds upon which it is asserted that the Register is a failure and ought to be abolished, it will be well to see what hopes there were that have been disappointed. The registration movement has a history of nearly half-a-century, and has been supported by all sorts of people and for all sorts of reasons; but among the latter three or four have always been prominent. In the first place, and with the founders of the movement, the analogy of the Medical Register had a powerful influence. It was hoped to organise a close profession of teachers, entrance to which would be barred to the inefficient and the unworthy. For the public, registration would be a protection against the unqualified adventurers who have always infested the schoolmaster's calling; for the Government, the Register would provide an easy means of collecting information about schools. But the interests and advantage of the teacher were the main objects. The Registration Council's powers were to be very wide. The Council was, by its examinations, to control the entrance to the profession. Social consideration, professional status, and dignity were to be added unto the enrolled teacher. This is to-day a most powerful argument in favour of registration, though the times are altered. The association of the State with the conduct and control of education has grown much closer, and it is now seen that the ideal of a self-governing corporation of teachers must be correspondingly modified.

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The Registration Council is a professional council only in its exercise of the power to cancel registration for unprofessional conduct. Still, it is true that "the recognition of a profession with powers (quite properly limited in the public interest) over entrance to its ranks is an essential element in creating a respected and permanent profession; and the abolition of this council, to be replaced by administrative regulations which would end in ranking all members of the teaching profession in the lower grades of the Civil Service, is the chief mischief in the new policy, which does not recognise the value to the community of a corporate professional spirit among teachers." (*Resolution passed by a meeting of the heads of Training Colleges for Secondary Teachers, at Bedford College.*)

The second great object which it was expected that registration would subserve was the organisation of secondary education in England. The only Government Registration Bill, previous to Sir John Gorst's Bill of 1896, was put forward in conjunction with the Endowed Schools Bill immediately after the Taunton Commission had proved the need for a complete reorganisation of the endowed secondary schools, and it was clearly designed to give the Legislature as strong a control over the teachers in endowed schools as the companion Act gave over the school endowments. It is, of course, this aspect of registration which commends it to the official mind, and no doubt the fact that the organisation of secondary education has been for the past fifteen years proceeding upon quite different lines has much to do with the Board's decision to abolish the register. By means of its gradually extending system of grants the Board is influencing the public secondary schools quite powerfully enough; indeed, the "increase of direct official pressure," we are already told, "is in itself deleterious to education."[1] The objection that only through the Register were the private schools brought into relation with the Board has been largely met by the offer of free inspection followed by recognition to efficient schools which are unable or unwilling to accept Government grants.

Are we then to say that registration has no longer a part to play in educational administration, that other methods and instruments have superseded it? Surely the answer is that the schools are no other than the teachers make them. An official list of recognised schools is a concomitant merely of an official list of recognised teachers, and can never take its place. No doubt if the State prescribed a certain course of professional training and issued its own certificate to secondary-school teachers, as it does to elementary, a pigeon-holed document in a Government department would suffice. But secondary-school teachers qualify for their office in a thousand different ways. That is the most effectual safeguard of the freedom and variety of our schools, and long may it be so! But it necessarily involves a published register of teachers whose qualifications are satisfactory and a record of each man's experience. The Assistant-Masters' Association has expressed the issue clearly, though with a rhetoric that may be pardoned to honest indignation. "Are the secondary-school master and mistress," it asks, "to be the only professional men and women for whose competence the State gives no guarantee? Are employers, either in public or private schools, to be allowed to engage assistants who can give no evidence of having served a period of apprenticeship or having ever learnt their trade? Are teachers to be merely unlicensed amateurs, bringing discredit upon education by the pranks they play with it? Are the learned and the ignorant, the capable and the incapable, the genuine craftsman and the specious impostor, to be thrown again into one indiscriminate mass?" The question cannot be answered out of a list of recognised schools.

The third result which it was expected would follow from the establishment of the Register was that the training of secondary-school teachers would be stimulated. Witness after witness before the Special Committee of 1891 on Registration drew attention to the almost complete lack of training which characterised the secondary-school teachers and also to the great need for institutions in which such training would be given. The long list of institutions in Appendix D of the Registration Order shows that the desired facilities now exist, but it must be confessed that we are almost as far off as ever from the state of things prophesied by one distinguished advocate of training before the Committee, in which training would be almost as habitual in the case of secondary-school teachers as it is with elementary-school teachers. Here, if anywhere, the Register has broken down. Under the temporary regulations of the Registration Order, which were originally to have been superseded by permanent conditions in March, 1905, but were subsequently continued in force till March, 1906, training was not required of the applicant for registration. The proposed permanent regulations, however, demanded training, either in a training college or as a student teacher, from all applicants. The Registration Council in 1904 reported that "the women teachers are showing themselves alive to the situation" created by the coming into force of the permanent regulations. With men teachers it was not so. "Men are making practically no effort to avail themselves of the alternative to a training-college course provided by the Order, and the number admitted to the training colleges still remains small." Again, in its report for 1905, the Council finds the outlook equally serious. "The number of men applicants who were producing evidence of having undergone any form of professional training previous to entering on secondary-school teaching was entirely disproportionate to the needs of the profession; secondly, returns received from secondary training colleges made it obvious that this disproportion threatened to continue."

The facts are serious and must give rise to the gravest apprehensions for the future of the boys' secondary schools of England; but by what in-

[1] Resolutions of the Incorporated Association of Headmistresses.

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genious method can an argument for the abolition of the register be based upon them?

It is conceded that, as regards women teachers, registration is having the effect which was anticipated. Can it seriously be contended that, in the case of men, the effect is opposite and that the existence of the register discourages training? The truth is that the neglect of training by men is due to causes which a register with no sanctions behind it cannot touch. Yet even here the register is doing a service. It is authoritatively establishing the fact that the profession is losing its attraction for the youth of the coming generation. It is crossing the "i's" and dotting the "t's" for educational reformers like Prof. Sadler, who have been declaring that the conditions of the teacher's tenure and of his service must be speedily improved if we are not presently to find ourselves with no teachers at all. The plain man is apt to dismiss such warnings as exaggerated. Here is evidence which he cannot gainsay.

In the last report of the Registration Council, the suggestion is made that the movement towards registration should be assisted by a sanction, and that the Board should declare that "no secondary school in which the headmaster and a fair proportion of the staff are not registered teachers will be eligible as a grant-earning institution." So far as training is concerned the sanction is to be imposed:—"After the 31st July, 1907, the Board may, on consideration of the teaching staff [of a grant-earning secondary school] as a whole, require that a certain proportion of all new appointments shall consist of persons who have gone through a course of training recognised by the Board for the purpose." The Board is evidently of opinion that this requirement will suffice in lieu of registration, though it is noteworthy that it proposes to take account in this connection of persons whose names "have previously been entered on Column B of the Register." But a register supported by this sanction on which all teachers will wish their names enrolled will have a much greater influence upon the profession generally than a requirement affecting at most a few hundred schools, schools, too, in which many quite competent teachers neither expect nor intend to teach. Nor must it be forgotten that the Board alone is responsible for codes and regulations, while the conditions of registration are settled in the first instance by the Consultative Committee. The choice, if choice there is to be, is between administrative and professional methods. There is no need to labour the point as to which will be the more liberal and elastic and the more educationally sound.

What then are the present difficulties in the way of the continuance of the Register, and are they insuperable? Setting aside the failure of the entrants to the profession to respond to the permanent conditions of registration, a failure of which, so far as it is due to economic causes, the new local authorities are showing themselves increasingly conscious, and for which, so far as it be due to professional disbelief in the value of training, the gradual imposition of sanctions should provide a remedy, it may be said that there are two great reasons for dissatisfaction with the Register as it is now constituted; the first an administrative one, the second connected with the division of the Register into two columns.

Up to December 31st last the Board had recognised for the purposes of registration very nearly 3,000 schools. The late Parliamentary Secretary of the Board informed the House of Commons that the work had been extremely well done. "It was a remarkable piece of work to have done in the time," he said, "and should not pass without recognition." The statement was true enough, due allowance being made for the conditions under which the work was performed. The staff the Board had at disposal was far too small to allow of detailed inspections, and as the object was primarily the registration of the teacher and not the approval of the school, justice to the former often involved great generosity to the latter. As a temporary device and for a strictly limited purpose recognition upon these lines was justified. But, obviously, with the coming into force of the permanent conditions of registration the situation is changed. Most readers of this article will be acquainted with recognised schools, the inclusion of which in a list issued with the approval of the Board and for the information of the public could not for one moment be defended. Yet recognition of the school must remain a condition precedent to registration or there can be no "approved service," without which the Register would be useless.

There can be only one solution of the difficulty, and that a drastic one. The latest Secondary School Regulations of the Board, perhaps with intention, indicate the way out. The Board is now prepared to recognise any school, whether eligible for grants or no, as efficient, provided it is found upon inspection to satisfy certain conditions as to staff, instruction, premises, and equipment. No charge is to be made for the inspection. Why then should not the list of efficient schools replace the existing list of recognised schools? Time would be needed to allow of the new methods of recognition being got into working order, but that same time should in any case be given that the interests of existing teachers may be safeguarded. It may be objected that the list of efficient schools will consist entirely of schools which are purely secondary in type. At first that may be so, but having begun with the efficient secondary schools it will not be right, nor will it be possible, to stop there. A large group of schools lives in the borderland between primary and secondary. Many of them are efficient after their kind. Again, there are kindergarten schools and preparatory schools (for the teachers in which, by the bye, the present Register provides no place) which probably reach a higher average of efficiency than any other class of school in England. Once the principle that any schools which cannot earn grants have a right to official approval is conceded, and it *is* conceded now, then

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inevitably it must sooner or later be applied to all schools which have a recognised place in our educational system and fill it worthily. Just as now kindergarten teachers feel it a grave disability that they cannot register, and that fact is being advanced as a reason for abolishing the Register, so in no long time kindergarten schools will be claiming their right to a place on the list of efficient schools, and the Board of Education, having learnt by experience, must have already made up its mind to admit the justice of the plea.

Lastly, we come to the real crux, the double column. There is much to be said both for and against it. The registration movement was initiated by secondary-school teachers for secondary-school teachers. The driving power has been throughout supplied by that section of the profession. It is true that the Elementary School Teachers' Union has put forward as one of its objects the raising of teaching to the dignity of a profession by means of a public register of duly qualified teachers for every class of school; still, in the words of its representative before the 1891 Committee, "it has not been for us a pressing necessity that there should be a register, because we were already on a register of teachers," and the Union has done very little to aid the movement. Again, it was for secondary-school teachers, unorganised and unrecognised, that registration was chiefly needed. The charlatan was already excluded from the elementary school. Moreover, from the nature of the case, the academic qualifications of a secondary-school teacher differ both in scope and in degree from those of an elementary-school teacher, and in the opinion of many the qualifying training and experience must also differ. A register which was open to the ordinary certificated teacher must have so low a standard of entrance, it was said, as to be practically worthless for the purposes of the secondary school. Yet it was difficult to justify a standard of entrance which would keep out the teacher whose competence was certified by the Government. The only alternative to the double column, namely, a graded register, would have been equally unwelcome to the elementary-school teachers, and in addition would have been unworkable with our present ungraded schools.

On the other hand, the Act of 1899 distinctly laid it down that there should be a Register of teachers, not of certain classes of teachers, and that the names should be arranged in strict alphabetical order. The double-column arrangement, if not actually illegal, certainly evades the spirit of the Statute. The dichotomy, too, between elementary schools and "schools other than elementary" has led to all sorts of anomalies. It was, as an administrative division, clear enough, but the principle of the Register should have been professional and not administrative. When it is possible for a school with perfect continuity of curriculum to be at one time "elementary," at another "other than elementary," according as this or that change is made in departmental regulations, there will be great unfairness as between teacher and teacher. The basis of classification from the point of view of the Register is evidently wrong. Again, the elementary branch of the profession has throughout been bitterly opposed to the division. All were clapped into Column A without so much as "by your leave." However high might be their academic qualifications, Column B was closed to them until they had served in a recognised secondary school, and the more Column B grew the less became their chances of ever entering a secondary school at all.

The Secondary Education Commissioners of ten years ago realised the problem. "Unless," they said, "some *via media* of compromise can be found it would seem as if the two parties, though both desiring registration, must remain in the position of stalemate." After ten years, that is exactly where we are to-day.

What are the prospects of "compromise"? After what has happened it must be admitted that a double-column Register is out of the question. There must be one column, and the certificated teacher must be admitted. On no other terms can the opposition be bought off. To judge from some of the suggestions which have been put forward, the hope of preserving the Register for secondary-school teachers still exists. To the writer, exercising the best judgment he can, it appears a vain hope. The power which put Clause 36 in the Bill will suffice to keep it there. And even were it not so, no workable proposal is in the field.

It remains, then, for secondary-school teachers to make up their minds quickly whether a Register of teachers on these terms is worth having. "A mere register of teachers, which would include all classes, whether engaged in secondary, higher elementary, elementary, or technical schools, and whether teaching one special subject or many, would be of little or no use to teachers in secondary schools, and would serve few or none of the purposes which those who have worked most assiduously for the register of secondary teachers most earnestly desire. From our point of view it would be useless, perhaps even worse than useless." The opinion of the headmasters deserves respect. And yet, consider it again! Such a Register would not be a mere list of names. In respect of each teacher would be recorded "a brief statement of his qualifications and teaching experience." Are those who will refer to the Register to be presumed incapable of discriminating between the graduate and the non-graduate, between teaching experience gained at University College School and that at Gower Street Council School? Will it be no gain that the name of every qualified secondary-school master should be recorded, even though many other names are there as well? If not, then we must comfort ourselves with a drawn game.

One last point: if the Register is still to go on occasion should be taken to qualify the word "teacher" in the originating clause. The Register is needed for school teachers, not for university professors, and it would not be difficult to define the word school by the age of the pupils.

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A SCHOOL HOLIDAY CAMP.

By J. L. PATON, M.A.
High-Master of the Grammar School, Manchester.

"The south winds are quick-witted,
The schools are sad and slow,
The masters quite omitted
The lore we wish to know."
R. W. Emerson.

MY first experience in camping with large parties was in connection with the Boys' Brigade. I could not help thinking what a valuable adjunct such a camp would be to the life of the city day school. The fact that the secondary-school boy comes from a more comfortable home makes the camp less necessary, it may be, from the standpoint of physical health, but even more necessary from certain higher standpoints.

In the first place, it is a splendid object-lesson in the fundamentals of political or social economy. A camp is a return to the primary conditions of life. In our comfortable and complicated civilisation there are so many steps between the boy and his primary needs. When a boy gets up in the morning he has no consciousness whatever of how many people have had to be up and doing in the dark and eerie hours to make the world comfortable for his lordship; to get him his milk, to light his fire, to black his boots, to bring him his picture postcard. Inevitably he begins to take all these things for granted unless the hard fact is brought home to him in the form of concrete necessity. When he comes home from school he finds his bed made, his room straightened and dusted, his dishes washed up, and his dinner cooked; and these things are done for him so invariably that he gets the idea that they do themselves, and never realises that someone has to do them. At camp he learns that things do not do themselves. There are no servants in camp for the simple reason that everyone must be a servant there, both to himself and to others. The comfortably living boy comes face to face with the simplicities and necessities of life. He learns *anschaulich*, as the Germans would say, the meaning of division of labour. He sees the contemptible worthlessness of the drone. He sees how, in St. Paul's phrase, "those members of the body which seem to be feeble are necessary, and those parts of the body politic which we think to be less honourable, on these we bestow more abundant honour"; in other words, how the working man may get on without the philosopher or the "ornament of society"; but the philosopher or the ornament of society cannot very well get on without the working man. The camp is the laboratory for practical demonstration and discovery of the elements of social science.

Again, the camp is the corollary of nature study in schools. The natural history master can take the boys to the specimens instead of always bringing the specimens to the boys. He can not only get them to discover the birds' nests, but he can give them the right attitude of mind and the right standard of conduct towards these secrets of Mother Nature. He sees what big eyes the youngster makes when he discovers his first lark's nest, his first sea mouse, or hermit crab; and if the concomitant expansion of the mind is anything like the expansion of the eyes, the school camp is worth all the trouble that may have been taken with it. Nor must it be forgotten that perhaps the most important object-lesson for the city boy is the lesson of personal health, and camp teaches him not to be afraid of fresh air, and to love the water. He can learn to swim in a week at camp, whereas it would take him half the term in the stuffy baths at home; and, if he has not learned ambulance at school, he gets usually a few simple lessons when he camps out. In any case he learns to be on familiar terms with the wild, unspoiled life of Nature, and feel the pure pleasure of "God's out-of-doors."

Another indirect result of school camp is that boys on leaving are more capable of helping in brigade camps and keener on doing so because they feel capable.

Such, in brief, is the *why*. Now as to the *how* and the *how much*. The following hints will seem superfluous to those who have done the thing. They are intended for those who, not having experience, are wishful to gain it with as few mistakes and *contretemps* as possible. In the following hints I contemplate the small camp of fifty boys. It is best to start in a small way and let the thing grow year by year. But if a camp is to be worked economically, there should be at least forty to fifty boys.

1. SITE.—The site chosen should be well drained. A low-lying grass meadow or pasture is ideal in a dry week, but directly there is a large downpour of rain you will be ankle-deep in mud, and not have a dry pair of feet in the company. Sandy subsoil is the best, but turf is apt to be loose on sand, and a loose turf does not give a proper hold for your tent-pegs. In such a case it is best to attach your tent-ropes to any ordinary bit of wood, and bury the wood horizontally in the ground about a foot below the surface. A slight slope is advantageous, but in that case each tent must be carefully trenched to prevent the water running through under the flap. Secure, if possible, shelter from the wind which is most likely to blow up in squalls and gales. Keep a fair distance from a town; the tuck-shop and the five-a-penny whiffs are only too much in evidence for the city boy. On the other hand, be near to your water and milk supply. The drinking-water should be tested by a competent chemist; negligence in such rudimentary matters is unforgivable in one who assumes the responsibility of a parent. It is well to be within reach of your baker and butcher's delivery carts. Don't pitch too near, or, at any rate, within sight of, a road; otherwise a night watch will be necessary to keep the tramps out. Secure yourself from the intrusion of cattle; cows have more of Paul Pry in them than you suspect. Avoid anthills. Be sure to have good and safe bathing accommodation; get exact and trustworthy information as to the

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best place, currents, &c. Fix up the rent charge with the farmer or landowner, but don't let him charge you more than 5s. per week for each tent pitched, and see that this includes water and use of field for games. If drinking-water has to be brought any distance, bargain for use of the farmer's "dandy." Some public authorities, like Conway and Hunstanton, give free permission for camping on the foreshore, and will lay on water for you.

2. Railway Fare.—Having fixed the site, arrange a specially reduced fare with the railway company. The reduction is usually substantial, and boys under fourteen years are allowed half-rate. Make sure also of your transport from the nearest railway station.

3. Equipment can either be hired or bought. If camp is going to be an annual institution, it is much cheaper to buy outright. The best plan is to order what is needed either for hire or purchase, to keep the stuff that is good, and to send back the rest and pay the hire on it. The firms that deal in second-hand army stuff are, among others:—

Mr. B. Edgington, 2 Duke Street, S.E.

Messrs. J. Langdon and Sons, 136 Duke Street, Liverpool.

Messrs. J. Peters and Son, 44 Tenter Street South, Goodman's Fields, E.

Messrs. Piggott Bros., 57 Bishopsgate Street Without, E.C.

Messrs. Wm. Pope and Sons, 20 Bury Street, St. Mary Axe, E.C.

Mr. A. Pope, Downham Market, Norfolk.

Army bell-tents are the best. Allow for six boys to a tent. Each tent will hold eight or ten at a push, but in case of illness, especially anything feverish or zymotic, one tent ought to be cleared at once and isolated for the patient. This does not overcrowd the other tents if you have reckoned only six to a tent. One extra tent is needed for stores. A ridge tent, Swiss army pattern, is enough for this purpose, and quite convenient. This should be pitched separate near the cooking-galley, and the whole fenced round with hurdles or iron fences so as to keep out all except the cook, quartermaster, and orderlies of the day. A marquee is a great advantage for taking meals together and for the sing-songs in the evening, but it is always a great addition to expense, and, in case of foul weather, a great anxiety. Trestle tables and forms are best hired locally.

Each boy will need a waterproof sheet, 56in. × 36in., on which to put his bed, or, better still, you can get tent-flooring, made in four pieces, and covering the whole interior of a bell-tent, for 30s., second-hand. Enterprising and self-helping boys will put these together for themselves out of tongued matchboarding and joists. Each camper must be provided with a palliasse, which is stuffed full of straw, and serves as his feather bed. Allow 10lb. of straw per boy in ordering, and get allowance for return. A few earwigs will go in with the straw, and boys will learn not to go into hysterics at the sight of them. Two army blankets or rugs should be provided for each camper. Pillow-slips I once provided: as they were chiefly used for the collection of cocklefish and mushrooms, I have since regarded them as an *affaire de luxe*. Each tent wants a set of pegs fixed up round the pole, a looking-glass, a mallet (this is included in the cost of hire or purchase), and a hurricane lamp. If boys bring their own knives, forks, and spoons, a box should be provided for each tent to keep these instruments of war.

For cooking-galley you need a small field boiler. The twelve-gallon size will suffice to cook for fifty, and leave enough hot water for washing up. In addition, two camp kettles or digesters for use with the field oven or simple brick-fire, milk-pail, water-buckets, wood-chopper, meat-chopper, bread-knife, ladles and wooden spoons, mincing-machine, nutmeg-grater, tin-opener, corkscrew, knife-board, serving-dishes, washing-bowls, plates and mugs, knives, forks, and spoons. It saves breakages with untrained Mary Anns in trousers to get all plates and mugs in enamelled ironware.

Pick-axe and spade are needed for trenching. A big trench should be dug for the kitchen waste (we call this "Tophet"), and another to the leeward of the camp for latrines; this must be screened carefully with canvas and a suitable bench roughly fixed up. Sterilise daily with Condy's fluid.

A couple of tin boxes should be taken for stores like bread and tea, which need to be kept dry; also a box of stationery, a tool-box, and a plentiful supply of packing-needles and thread with accessories. The ambulance box should provide simple remedies for simple ailments, not forgetting the toothache tincture. Camp life always finds out a weak tooth. Also bandages, surgical cotton-wool, vaseline, with simple antiseptics and insecticidal compounds.

4. Food.—The army allowance of 1s. per day will provide breakfast of tea or coffee, bread-and-butter, and salt meat; dinner of hot meat with potatoes and sweets; tea with bread-and-butter or jam; supper of cocoa or Eiffel Tower lemonade and biscuits. If more is given, let it be by way of porridge for breakfast and vegetables for dinner. Corned beef and ham, with occasional tongue, do for breakfast; hams may be taken ready boiled. Silverside of beef is the best dinner-joint, and the soup is as good as the joint. Puddings will depend on your cook. Plumduff, pineapple chunks, ½d. gingerbreads, simple treacle or chocolate puddings made with bread-crumbs are popular. Rice pudding, too, goes down well, especially if a few added sultanas lend to it an air of adventure. For quantities in ordering I cannot do better than refer to the "Boys' Brigade Handbook for Camping," supplied at a cost of 1s. post free by headquarters, Buchanan Street, Glasgow.

5. Duties.—An advance-party should be chosen of five or six strong fellows to go down with an

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officer two days before camp begins. These will prepare the ground, pitch the tents, dig latrine trenches and fix the canvas screens, set up the cooking-galley and prepare the field oven. They will also unpack all the stores, fill the palliasses with straw, and set them out with the appertaining blankets, two for each boy, in the tents. The advance-party has a lot of work, too, and therefore must be not only strong, but willing. The quartermaster, if at all possible, should be with them. The *quartermaster* is responsible for the purchase, delivery, storing, and issuing of stores. He is also responsible for the cleanliness and sanitation of the camp, and he will find his work facilitated if each boy's blankets and palliasse bear a distinctive number. This prevents confusion of properties, and in case of infectious illness it enables one at once to identify the victim's kit.

The *cook* acts under the quartermaster. For a first venture it is wise to take an old army cook, commissionaire, or handy man; usual wages, 30s. a week. But in a small camp it is quite possible, and best in many ways, to do without paid service altogether. Boys who have served as cooks' assistants one year will be quite ready to act as cooks next year.

Five *orderlies* are wanted to assist the cook. These should be taken in rotation, one from each tent, day by day. Advance-party are excused, so that everyone will get a turn. Their duties are to get the milk and water in the morning, chop wood, set the table, wait at table, and wash up after meals; to peel the potatoes and onions, scrape the carrots, wash out the dish-cloths, scrub down tables, and generally "redd up" under the quartermaster's orders, and take letters to post.

One officer must act as *banker*, and boys should give in all their loose cash to him at once on arrival, and withdraw at stated hour after breakfast for the day.

Another officer must be in charge of *games* and responsible for all cricket or other apparatus. He will also arrange matches, if possible. Another qualified man must be in charge of the *ambulance*, and, if night guard is necessary, an officer must undertake responsibility for it.

Each tent will have a *tent sergeant*, whose duty will be to keep order in the tent, put out lights at sound of the bugle, keep the tent-pegs firm in the ground, see that tent-ropes are slackened for the night (you must always presume that it will rain in the night), and have the tent ready for inspection when the commanding officer comes round after breakfast.

6. ROUTINE.—Social life is impossible without a regular framework of hours. There must be regular times for reveillé, prayers, breakfast, followed by camp inspection, and other meals. There should also be appointed time for bathing parade, varying possibly according to state of tide. When the evening draws in, get a camp fire going, and have a sing-song (we call it the "in-tent cordial"); draw out all latent talent, sing the school-songs in chorus; friends often drop in and help with song or recitation; even bagpipes are tolerable in the open; it diversifies proceedings if you have a fire-balloon to let off now and again, or get a good bonfire. Or you may take the whole camp off for a route-march to see some interesting sight, or for a sail; or you may organise some athletic sports.

Rules should be few, but strictly enforced. (i) No intoxicants and no smoking allowed. (ii) No bathing save at bathing parade; no boating save with special permission of commanding officer, who will be careful never to allow it without some responsible officer being in charge. (iii) All waste of food strictly forbidden. (iv) It is sometimes necessary to prescribe bounds.

7. EXPENSE.—If things are kept simple and carefully managed, 15s. a week is enough to cover the expense. I cannot do better than refer to the "Boys' Brigade Handbook," already cited, which gives a good working estimate, and invaluable hints to amateur quartermasters as to the amount of straw, of coal, bread, potatoes, &c., which they should order.

8. The CAMP CIRCULAR should be issued at least six weeks before the beginning of camp, and should give, as briefly as possible, all details which parents will require to know as to time, place, and cost. Boys should be told exactly what to bring—greatcoat and mackintosh, extra suit and cap, change of shoes, underclothing and socks, two towels with loop attached for hanging up, bathing-pants, soap, toothbrush, hair brush and comb. It is best to sleep in flannel, either pyjamas or an old suit of cricketing things. Boys should be warned that stiff felt hats, starched collars and cuffs, and all jewellery are out of place in a camp. Every article should be clearly marked with the owner's name. All kit should be portable.

The *Circular* should also set forth in general terms the duties required, the camp regulations, the postal address, and any special arrangements made for reception of visitors (*e.g.* a parents' cricket-match). If any arrangement is made for storing bicycles, this should be specified. As time draws nearer, it is advisable to have one or more meetings of all who think of joining, to explain more in detail what the arrangements are and answer questions which naturally arise. And, lastly, it will be necessary to give precise instructions as to issue of tickets and entrainment.

A Course in Vertebrate Zoology. By H. S. Pratt. x.+299 pp. (Ginn.) 7s.—Dr. Pratt's laboratory course on invertebrate animals, published three years ago, was in many respects a valuable addition to our manuals of practical zoology, and the present volume will be welcomed by all who have experience of the author's methods. It gives instruction for the dissection of types of all the vertebrate classes in somewhat less detail than is usual in the better-known manuals. There is room, we think, for a course of this character. Only one of the types described is distinctively American, so that the book will be found almost as useful to the British as to the American student.

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HOW TO SET TO WORK AT NATURAL HISTORY.

By F. W. HEADLEY, M.A.
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THE object of this article is to assist those who wish to work at natural history, schoolmasters and schoolmistresses in particular, and who need some guidance at the outset. To begin with, two things must be borne in mind: first, that knowledge on such a subject gained only from books is of little or no use; secondly, that what a man learns by his own observation will be insufficient in amount, and must, therefore, be largely supplemented by reading. But what he learns by reading—a very inferior method, no doubt—need not be barren, unprofitable stuff if only he is an observer to a sufficient extent to give life to the facts that he derives from books. What he learns at first hand must find its proper setting among facts acquired at second hand. In these days it is impossible to learn by the use of one's own eyes, or otherwise discover for one's self, all one wishes to know. Some zealots will think that in saying this I am emphasising the wrong thing, especially when the subject in hand is natural history. It must be admitted that most Englishmen have had far too bookish an education. Still, there is a strong tendency among observers to exaggerate the importance of their own observation, and consequently to narrow the field of their studies.

To take ornithology first, the important thing in making a start is to be able to put a name (and the correct one) to a bird when you see it; to know its song or cry; to know which are migrants, which are residents; if migrants, to know when they come to Britain and when they leave our shores; to know the cock bird from the hen if they are distinguishable; to be familiar enough with the plumage to distinguish the garb of youth from that of maturity, the brilliant dress of the breeding season from what is called the eclipse plumage. For these purposes Mr. Howard Saunders's "Manual of British Birds" (Gurney and Jackson) is excellent. The strong point of the book is that it is a storehouse of correct information. There is a wood-cut of each bird. A cheaper and very useful book is Mr. Gordon's "Our Country's Birds, and How to Know Them" (Simpkin, Marshall, and Co.). It contains a large number of coloured figures, which, though not works of art, yet serve their purpose. It also provides much information as to classification and habits. As to the migration of the different species a great deal is to be learnt from Mr. Saunders's book. Mr. Gordon mentions the usual times of arrival and departure. Mr. Eagle Clarke's papers, founded on the evidence obtained by the committee of the British Association appointed to investigate migration, are admirable.[1]

For learning the songs of birds no book on the subject is of very much service, since the notes and phrases sound so different to different people. But Mr. Witchell's "Cries and Calls of Wild Birds" (unfortunately out of print) certainly assists one's own observations and helps to make them clear and definite. The great thing, however, is to be able to recognise the bird and his song. When song and songster have become familiar, each separately, to ear and eye, then, if we can only catch a momentary glimpse of the bird when he is singing, he becomes definitely associated with his music in our minds. It is the best plan to begin the study of the songs of birds in the winter time or very early spring, when none of the migrant songsters are here. In November the thrush may be heard if it is fairly warm. The robin sings nearly the whole year round, taking a rest only in July. In March the thrush, the missel thrush, the blackbird occasionally, the wren, the chaffinch, the hedge sparrow are welcoming the coming spring with music. When these are known beyond all possibility of mistake we are not so likely to be confused when in April the Warblers begin to flock in from Africa.

Though other people's notes on the songs of birds are often of little use to us, it is difficult to over-emphasise the importance to a naturalist, whatever he is at work upon, of taking notes systematically.

Spring is the best time of year for the ornithologist. He has then an opportunity of learning about songs, nesting habits, breeding plumage, migration. Later on, from June to September, he can learn to distinguish the plumage of the birds of the year from that of their parents. In September and October, and even in August, the return migration is in progress.

Myself, I have never been able to understand why so many ornithologists are content to remain quite ignorant of the subject of flight. For the study of this I am obliged to recommend my own book, "The Structure and Life of Birds"[1] (Macmillan), since I know of no other which aims at making it intelligible for those who are not strong in mathematics. In French there is Prof. Marey's "Le vol des oiseaux" (G. Masson, Paris), a scientific work of a high order.

The classification of birds is a very difficult subject, since there are not enough salient points by the aid of which we can divide them into orders and sub-orders. I recommend Mivart's "Elements of Ornithology" (R. H. Porter). A museum with a good collection of birds and of typical breast-bones and skulls will, of course, be of great service. There are not many books from which we can learn much about foreign birds, but there is Mr. Evans's "Birds," in the *Cambridge Natural History* (Macmillan); and there is Newton's "Dictionary of Birds" (Black). The price of Dresser's great work, "The Birds of Europe," is prohibitive. His "Manual of Palæarctic Birds" has no illustrations. The

[1] They are obtainable at the office of the British Association.

[1] I fear out of print.

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aviaries at the Zoo should be studiously inspected. They are constantly being enlarged and improved.[1]

What part ought photography to play in natural history? There is no art which requires more keeping in its proper place than photography. The brothers Kearton, Mr. Kirk, and others have given us photographs of birds that are real works of art, and have taught us a great deal about the attitudes of birds. But no definite ornithological discovery has, I believe, been made with the aid of the camera, except as regards the position of the wings during flight. To a naturalist photography may be a snare. He may, instead of studying his birds, his insects, or his flowers, devote himself to photographing them and making pictures of them.

I pass on now to the subject of mammals, merely remarking that though every naturalist must to some extent be a specialist, still those who have to do with teaching must be careful not to narrow down overmuch. Unfortunately, British mammals are few in number. Still they have their interest. The small ones are easily caught in traps. Mr. R. Lydekker's "British Mammals" (Allen's *Naturalist's Library*) will supply what information is required. For those who wish to investigate scientific methods of breeding I recommend Prof. Ewart's "Penicuik Experiments."

Much that has been already said applies equally to other branches of natural history. This and want of space will account for the extreme brevity of my remarks on the study of insects. For lepidoptera there is Newman's illustrated "British Butterflies and Moths" (W. H. Allen)—good for "spotting" what you catch. There is Kirby's "Butterflies and Moths of Europe" (Ernest Nister). "Familiar Butterflies and Moths" (Cassell) is a smaller and cheaper book by Mr. Kirby.

But what I would urge is that some other order should be chosen for study, *e.g.* bees and wasps; butterflies and moths are so beautiful that they have an irresistible attraction. But bees have at least an equal interest. Schuckard's "British Bees" (L. Reeve and Co.) is a useful book. Maeterlinck's "Life of the Bee" (George Allen) is a book of wonderful charm. Staveley's "British Insects" (L. Reeve and Co.) gives an account of the different orders. There is another volume by the same author, dealing with spiders, a group of unsurpassed interest, but one which has but few devotees.[2]

Molluscs are fertile in interest. They are not difficult to study. For identification of land and freshwater species there is "The Collector's Manual of Freshwater Shells," by L. E. Adams (Taylor Bros., Leeds), illustrated but cheap. A more expensive book now coming out in five-shilling parts is "A Monograph of British Land and Freshwater Shells," by J. W. Taylor (Taylor Bros.). "British Conchology," by Gwynn Jeffreys, deals with all British molluscs, marine and other. It is foolish to be a mere conchologist, and neglect the structure of the mollusc that secreted the shell. Thomson's "Outlines of Zoology" (Young J. Pentland) is good on the structure and development of molluscs.

Our rivers and their backwaters, our lakes and our ponds teem with life. Huxley has devoted a volume to the crayfish. On "Aquatic Insects" there is an excellent book by Prof. Miall (Macmillan). Unfortunately, for the study of the multitudinous minute pond animals and plants no really good cheap books are to be had. Of course, types of the various classes are described in books on general zoology. Rotifers are very interesting and very beautiful. Hudson and Gosse's monograph, in which they are excellently described, is, unfortunately, out of print. Occasionally a copy may be picked up. Some few species are described in Furneaux's "Life in Ponds and Streams" (Longmans). Then there is Carpenter's book, "The Microscope and its Revelations" (Churchill). To such general books we must look for assistance in studying the minute crustaceans called entomostraca, unless we can obtain a copy of Baird's "British Entomostraca."[3]

But if the forms of life that inhabit fresh water are worthy of study, much more so are the denizens of the sea. No one who wishes to know his way among all the diverse forms of animal life should neglect the marine species. In fresh water some whole classes of animals are unrepresented or represented only very meagrely. If circumstances do not preclude it, I advise everyone who wishes to make himself a zoologist to go to some marine laboratory, that at Millport for example, or that at Port Erin, see what the dredge and tow net can do, examine all they bring up as far as he can, but for closer study limit himself to one or two particular classes of marine animals. In less favourable circumstances one may still do much at the seaside by collecting for oneself and studying all that one can collect. It is not difficult to make a tow net of fine muslin to catch the minute forms of life. Newbigin's "Life by the Seashore" (Swan Sonnenschein) will be found a very useful book.

It is important to get a fairly wide view over the great animal kingdom. We must study the allies of the animals which we observe. It will not do to limit our view to isolated forms. We want for this a book on general zoology. It must be a book which describes the structure well without ever losing sight of the fact that the live animal, not the dead, is the proper object of our studies. Prof. J. A. Thomson's "Outlines of Zoology," already mentioned, can be recommended as an absolutely first-class book, which, though only a crown octavo, 800 pages, passes in review types of the whole animal kingdom. It is packed with facts, but, unlike some books of the same class, never becomes dry and uninteresting. Parker's

[1] For Londoners, Swann's "Birds of London" (Swan Sonnenschein) is a useful book.

[2] Insect collectors can obtain the apparatus they want from Messrs. Watkins and Doncaster, 36, Strand; also many books on natural history.

[3] Messrs. Baker, 244, High Holborn, supply apparatus for collecting microscopic pond animals.

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"Lessons in Elementary Biology" (Macmillan) is another first-rate book. It deals with the lower types of life.

To pass on to botany. Zoology has, no doubt, the grander field, and there are many who agree with the zoologist who thanked Heaven that he was not a botanist. Nevertheless, the botanist has many consolations. His working material is easy to get. While the ornithologist has often to be content with a snap-shot at his bird from his gun or his field-glass, the botanist quietly picks his flower and studies it. "A Year's Botany," by Mrs. Kitchener (Longmans), is simplicity itself, and it is full of matter as an egg is of meat. It lays hold of the interesting points and makes them clear. For identifying plants Bentham and Hooker's "Handbook of the British Flora" (L. Reeve and Co.) is very good. It is as little technical as possible, and what technicalities there are are explained. There is a wood-cut of every plant. Hayward's "Botanist's Pocket Book" (Bell and Daldy) and Step's "Wayside and Woodland Blossoms" (Warne) are useful. De Crespigny's "New London Flora" (Hardwicke and Bogue) supplies information as to the localities near London where particular plants are to be found. Anyone who wishes to take a wider range and to see how deep an interest can be found in botany should study Kerner's "Natural History of Plants" (Blackie). Unfortunately, it is rather expensive, but it is a splendid book. In conclusion, I cannot mislead anyone when I recommend Darwin's botanical books on the fertilisation of orchids, on climbing plants, and on insectivorous plants. In these books we see science not in long-established possession of undisputed territory, but, what is more interesting, advancing and annexing new regions.

LIGHT LITERATURE FOR THE HOLIDAYS.

By Ernest A. Baker, M.A.

THE last twelve or eighteen months has not been an exciting time in the literary world. When we think of the days when the weekly papers were announcing new novels by George Meredith and Thomas Hardy, or when Mr. Barrie and Mr. Kipling were going on from strength to strength, the present seems a dull season indeed. Though we may hope against hope, we cannot reasonably expect from the former two anything very important; Mr. Barrie is busy writing plays, and Mr. Kipling's stories have for some years been growing steadily fewer and farther between. Of late the only masterpieces we have had given us have been those of middling writers; and from men who have taught us to expect something greater we have had only middling things. It has been a time of average work, and yet a good standard has been maintained, and the average quality of current literature is respectable.

One event that must be chronicled is the issue of a library edition of Mr. Swinburne's tragedies, previously to be had only in volumes containing single plays, and many of these getting very scarce. From the same great survivor of a past age of poetry a novel was announced just a year ago. "Love's Cross-currents" (Chatto) proved to be a reprint and not a brand new work, but interesting as a characteristic revelation in prose of the mind of our chief living poet. It was a work of his youth; but Mr. Swinburne has never grown old. Two posthumous works by George Gissing have turned out to be among his best and most typical studies of the grim, cramped existence of the multitudes in our modern cities—"Will Warburton, a romance of real life" (Constable), was a full-length novel of the same kind as "Demos" and "The Nether World"; and "The House of Cobwebs and Other Stories" (Constable) proved to be a collection of short stories of the same masterly kind as those in "Human Odds and Ends." In the latter Mr. Thomas Seccombe writes a sympathetic appreciation of the dead novelist. From Mr. Howells and Mr. James we have had work not surpassing, indeed not equal to, much that they produced long ago. Of Mr. James's latest and most esoteric style it must be confessed that one requires a long and arduous training to appreciate it properly. A pupil of his, Mrs. Edith Wharton, writes far less abstrusely; her "House of Mirth" (Macmillan) is a book to repay reading and reading again.

Several other Americans are among the writers from whom genuine works of literature are to be expected. Alice Brown, the author of that very fine and thoughtful study "The Mannerings," has just published a tale of village life in New England, "Paradise" (Constable), a tale of a plain, unambitious type, but alive with humour and true imagination. Its one drawback is the excellence of its vernacular, a feature which has also been the chief impediment to English appreciation of another powerful novelist, "Charles Egbert Craddock," portrayer of mountain life in Tennessee, who brought out a novel, "The Storm-centre" (Macmillan), last summer. Owen Wister has departed from the virile and strenuous style of "The Virginian," and dealt with a quieter theme in "Lady Baltimore" (Macmillan), depicting the placid rural world of a little town in South Carolina. Mrs. Wiggin's "Rose o' the River" (Constable) and Alice Hegan Rice's "Sandy" (Hodder), both characteristic stories by thoroughly individual writers, would, doubtless, have made more stir had not their authors turned out better work beforehand. Readers to whom the creator of Sandy is a new writer, and who are charmed with the book, will have an enviable privilege in being able to acquaint themselves with "Lovey Mary" and "Mrs. Wiggs of the Cabbage Patch" for the first time. In "Monarch, the Big Bear of Tallack" (Constable), Mr. Ernest Thompson Seton has produced another biography of a grizzly. In spite of Americanisms and a too-effusive style of prose rhapsody, Mr. Seton's lives of the hunted, with their revelation of the spirit of the wild, are books to teach both young and old the right note of good writing—they have the truth and spontaneity that constitute inspiration. Mr.

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Marion Crawford can hardly be counted an American at this time of day, but "Soprano, a Portrait" (Macmillan), which he added a little while ago to the long array of his novels, may as well be grouped with the rest.

The most arresting of the new generation of novelists is Mr. Maurice Hewlett, whose "Fond Adventures; Tales of the Youth of the World" (Macmillan) and "The Fool Errant" (Heinemann) are striking books enough, though again not among his finest. His literary ancestors are two such contrasts as Meredith and Kipling. The influence of the former is more obvious because more superficial; it is traceable in his style, which is a highly-cultivated and exotic thing, and also in some phases of his psychology. That of the latter is more profound, at any rate in the two works now under notice, for it informs the whole spirit of the narrative. In one story among "Fond Adventures," Mr. Hewlett, the greatest scholar among living novelists, has set himself to reproduce the style of the Sagas. The incident of the family feud, the council of relatives, the treaty-making, and the death of Buondelmonte make you think of Iceland and the Laxdale story, and so does the strong, staccato character of the narrative. There is no false mediævalism about Mr. Hewlett. He writes both like a modern and like a man out of the Middle Ages—like a man from the very times he portrays who has learned to speak the idioms of to-day. No one has carried farther the principle of art for the sake of art; no one has more of the artistic detachment belauded by certain critics. In this little bundle of tales the reader feels as if there were no such thing as sentiment or morality, and the result is a hardness and coldness—there is not a figure among these vivid creations for whom one could have a spark of affection or friendly sympathy. "The Fool Errant" tells his own story, but does not induce one to love him. He is too strange a curiosity, though so wonderfully vitalised. Francis Strelley is a spiritual Quixote. The author calls him "an incurable believer in the native goodness of mankind." Committing what the world of his day considered a venial sin, but he with his supramundane morality looks upon as a heinous crime, he casts away rank and wealth and sets out on a fantastic pilgrimage to earn forgiveness. His adventures among all classes in eighteenth-century Italy are as interesting and exciting as any picaresque romance; but the real interest is in his strongly visionary character, and the diversity of people he comes in contact with in that unconventional and profoundly unmoral society. Another writer of similar ancestry is Mr. Bernard Capes, who has done far better work than "A Jay of Italy" (Methuen), the main idea of which is, however, a noble one. But the writer's cleverness has tortured language and character to such an extent that the one seems hardly English and the other hardly human. Again another Meredithian is Mr. Charles Marriott, whose "Mrs. Alemere's Elopement" (Nash) and "The Lapse of Vivien Eady" (Nash), though more realistic and sober, have not the brilliance and charm of his first book, "The Column."

Mrs. Humphry Ward, in "The Marriage of William Ashe" (Smith, Elder), raised more than a suspicion that she was drawing from actual originals of a former generation, and in "Fenwick's Career" she makes no disguise of the fact that her story is a more modern version of the artist Romney's life. These books are not equal to "Marcella," but they contain some of her best portraiture of women. Other novelists who have given us good things, yet not of their best, are Mrs. Margaret Woods in "The King's Revoke" (Smith, Elder), Mr. Stanley Weyman in "Starvecrow Farm" (Hutchinson), and Mr. Anthony Hope in "A Servant of the Public" (Methuen). Mr. Crockett in "Kid McGhie" (Clarke and Co.) has all but created another Cleg Kelly. The miraculous career of "She" has been continued by Mr. Rider Haggard in "Ayesha" (Ward, Lock), while he has tried another sort of adventures in "The Way of the Spirit" (Hutchinson). The pleasant comedy and the charming sentimentality of Agnes and Egerton Castle reappear in "French Nan" and "Rose of the World" (both Smith, Elder). Walter Raymond has put more "good souls of Cider Land" into his new Somersetshire story "Jacob and John" (Hodder). Another country novel that breathes the right spirit is Gwendolen Pryce's "Son of Arvon" (Unwin), the life of a young Welsh yeoman on a farm in Carnarvonshire, full of affectionate appreciation of the Celtic nature. "Q." is writing more tales of the Delectable Duchy. "The Mayor of Troy" is a sort of sequel to that inimitable comedy "The Astonishing Adventures of Troy Town"; "Shining Ferry" contains some of his most engaging and most humorous character-drawing in the hearty old she-skipper, the blind boy and his sister, and the simple, wholesome people of a world that seems like a survival of some primitive Arcadia. The introspective studies of a strong, successful man brought face to face with impending death, and of a self-righteous, cruel man whose vile nature is suddenly revealed to himself, are more serious, and the former, at any rate, is deeply impressive.

A new school of sea-writers has arisen and thrown into the shade the later stories of Mr. Clark Russell, author of that very fine romance "The Wreck of the *Grosvenor*." Mr. Edward Noble, author of "The Waves of Fate" (Blackwood), Edmund Downey, with his amusing "Dorothy Tuke" (Hurst and Blackett), Norman Duncan, with two novels, "The Mother" and "Dr. Grenfell's Parish" (Hodder), have this in common that they give a most vivid realisation of the mariner's life with little romantic embroidery. Mr. W. W. Jacobs can hardly be classed as a simple nautical story-teller, though he still shows a preference for seafaring characters. His "Captains All" (Hodder) contains more landsmen than sailors, the best story being "The Temptation of Burge"—a converted burglar. The compact little farces and drolleries of this book are more congenial to him than the kind of thing he at-

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tempted the year before, "Dialstone Lane," a long story which contained humorous characters and comic scenes, but had a lame ending. Mr. Jacobs represents the lighter side of Dickens, the Dickens of the "Sketches by Boz"; he is a teller of tales, not a novelist.

A group of public school novels is noteworthy. "Hugh Rendal" by Lionel Portman (Methuen), "The Hill" (Murray), a remarkable study of Harrow, by Mr. H. A. Vachell, and Mr. Desmond F. T. Coke's story of Shrewsbury School. Mr. Vachell has since published a novel of Brittany, "The Face of Clay" (Murray), in which some artist and peasant characters are admirably drawn. Mr. Archibald Marshall's "Richard Baldock" (Alston Rivers) is a readable first novel; the best part of it is the life of a boy at home and at school.

Sociological novels have a way of being pessimistic and depressing. This is not the case with Mr. Richard Whiteing's "Ring in the New" (Hutchinson), which deals with the problems of the London poor, and portrays and criticises actual crazes, vices, and theories of the day, and yet is of the nature of an optimistic forecast. It is a contrast in this respect to the American work that is making such a stir on both sides of the Atlantic just now, "The Jungle," by Upton Sinclair (Heinemann). Mr. H. G. Wells's last book was a departure from his more characteristic studies of society, and a return to the style of one of his most promising early novels, "The Wheels of Chance." "Kipps, the Story of a Simple Soul" (Macmillan), with its analysis of the class instincts, seems to owe some of its strength to autobiographical material. The poor, half-educated draper's assistant, getting a fortune and the opportunity to rise in the social scale, finds his happiness in his old sphere, and content with his natural lot better than wealth. It is a new and subtler reading of an old adage.

Historical novels have not overwhelmed us in quite such a flood as a few seasons ago, but they are fairly plentiful. Mr. Ford Madox Hueffer's "Fifth Queen" (Alston Rivers) chronicles a year of the reign of Henry VIII. at the time when Cromwell was negotiating the marriage with Anne of Cleves. The intrigues of that minister and of his spy Throckmorton, of Bishop Gardiner and the Princess Mary, furnish plenty of business, but the principal interest is in the "Fifth Queen" herself, Katharine Howard. The book is rather a brilliant pageant than a deep portrayal of the time. George Bartram's "Lads of the Fancy" (Duckworth) is a muscular novel of the days when an Englishman was "something blent of demigod and viking"—in other words, of the year 1811. It is full of strong and healthy-minded men and women, and of stirring incidents of the most various kinds, from prize-fights to elopements. Mr. R. H. Forster's "Arrow of the North" (Long) brings us back again to the Tudors, and is crammed with historical knowledge about the Scottish border and Northumberland at the time of Flodden. Mr. J. H. McCarthy has, in "The Flower of France" (Hurst and Blackett), made Joan of Arc the theme of just such another romance as "If I were King" and "The Dryad." Mr. Wymond Carey's "No. 101" is the romance of a secret agent in the days of Louis XIV., whose brilliant, dissolute court is alternately the scene with the camps and battlefields of the Low Countries. Mrs. A. E. Barr has gone twice again to old New York for stories of her usual simple, edifying kind; "A Story of a Single Note" introduces the reader again to the revolutionary period, and "The Belle of Bowling Green" (both Unwin) to the years 1812–14 and the war with England. Beatrice Marshall's "His Most Dear Ladye" (Seeley) is the story of Philip Sidney's sister, the Countess of Pembroke, for whom the "Arcadia" was written, and is much in the same style as Mrs. Barr's. Harold Molander's "Fortune Hunter" (Heinemann) and Lawrence Mott's "Jules of the Great Heart" (same publisher) deal, the one with the times of Gustavus Adolphus and the other with Canada in the days of the Hudson Bay Company. Max Baring's "Prophet of Wales" is a study of the Singing Revival in Wales, with a good deal of actual fact and portraiture of living people. The list of historical stories might be largely extended; these are a few of the most recent.

THE "BLUE WATER SCHOOL" FOR TEACHERS.

Cheap Holidays on Tramp Steamers.

By A. G. Linney.

THE schoolmaster who, jaded and fagged with the work and examinations of the summer term, rushes straight away a-Lunning or with the Polytechnic, is certainly getting a change of air and a contrast in surroundings. I have not a word to say against these enterprising people, whose organised travel arrangements are often so helpful to teachers. The chances are that there will not be just one, but very likely a score of dominies in the party, and, even if "shop" is reduced to a minimum, there is an almost unconscious moving together of those in the profession. Even should this not be so, this much is certain—the schoolmaster is in the company of those of his own social class; the point of view from which life is regarded is virtually the same.

A holiday on a trading steamer, call her "a tramp" if you like—the terms are not synonymous—will give, not merely a change of air and scene, but an insight into the life of another and very honourable profession, and will enable one to catch a glimpse of how Men regard Things from a point of view which is probably quite new to the teacher.

How to Set about It.—The owners of trading steamers are not inclined to give official encouragement to anybody seeking to take a trip on their boats. Board of Trade regulations are framed to discourage the carrying of those not concerned in the working of the ship. The would-

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be traveller will find that his best plan is to seek out some friend who is connected with a shipping office or shipping firm; better still if he has the luck to be acquainted with one of the owners of a freight steamer. Then the matter can be managed without great difficulty. It is a simple job for the passenger to be signed on the ship's books as an extra engineer or as a second steward or even as a cook's boy; he will duly proceed to the shipping office and "sign the book" with the rest of the crew. The nominal wage of "a shilling a month" need not harass his soul.

It is possible that the affair may be arranged through an ordinary passenger agent, but these folks are not keen on undertaking anything of the sort, and I strongly advise anyone who intends trying a trip of this nature to try to work it through a friend who has influence with owners of cargo boats.

THE QUESTION OF COST.—No hard-and-fast rule can be given on this point. On one or two traders the writer has paid as little as half-a-crown a day for everything; on other steamers the owners have charged 3s. 6d. per day, and the amount is seldom more than this. In port the passenger is welcome to stop aboard the boat if he wishes, and, at the terms indicated, it is vastly cheaper to do so. It is, I fancy, the common rule that the fees paid by a passenger on a trading boat are the perquisite of the captain. In one case in my own experience I had the greatest difficulty in persuading the skipper to accept even on the "half-crown a day" scale. On the other hand, some men almost expect a present or token of esteem above the arranged payment.

The steward, on whom one may be largely dependent for comfort or attention, should never be treated in niggardly fashion.

AN IMPORTANT POINT.—There is one matter on which it is well to be forewarned, and that is in regard to time. A regular passenger steamer starts more or less punctually, but the same can hardly be said of the trader. You need never expect to get away at the hour which will have been indicated to you, even if it has been given in the utmost good faith. The cargo has been slow in coming in, or the engines have been found faulty, or the stevedores have gone on strike, or something. The writer once spent five very wet days at Barry Dock in a steamer bound for Gibraltar. Most of the coal was in bunkers, and then the miners went on strike. Again, forty hours under the coal-tips on the Manchester Ship Canal is an experience which I don't want to repeat.

The same uncertainty exists on the homeward voyage, so that it is as well to allow a good margin between the nominal date of arrival and the reopening of school.

ACCOMMODATION AND FOOD.—I am presuming that the schoolmaster is most likely to seek a sea trip during his six or seven weeks' summer holiday, and that, therefore, the question of raging seas and stormy winds may be disregarded. The first day or two may be rather trying if the passenger is not the best of sailors, and he may miss the ministrations of the sympathetic professional steward, but I believe that he will usually find that he gets good attention on the humbler tramp. One thing is sure: he will be glad to miss that awful intangible cabiny smell which hangs about cross-Channel and ordinary passenger steamers—that impalpable suggestive odour, which is in itself quite enough to make the gorge rise.

The passenger on the cargo boat will very likely have a whole cabin to himself, and it is improbable that he will be cramped for room, even should be have a companion. There is nearly always a spare cabin off the saloon of this type of steamer, and one can be sure, too, of a bath-room. Much greater freedom is one of the chief advantages here, for there need be no donning of regulation garb, no conventionalities to be observed, no "Second-class passengers not allowed, &c." You can smoke when and where you like, and, unless you prove yourself an obnoxious fellow, you may spend all day on the bridge.

As to food, there is plenty of it. It is generally good, and I have never experienced the slightest unpleasantness in this respect. Meat will be on the table at every meal. There is always a variety of tinned foods, and fresh vegetables are got in port. The sea air gives most travellers a ravenous appetite, and I do not think that anyone contemplating a trip of the sort in question need worry himself on the point of victuals. The steward, if you do not treat him in too high and mighty a fashion, will always manage to let you have a cup of tea in the afternoon; but if the traveller wishes to have beer or wine with him, he must make his own arrangements. Tobacco he can buy from the captain, and that without the duty which he would have to pay on shore.

For ladies the same facilities do not exist—at least, not to my knowledge. Of course, there is no inherent reason why two ladies should not go together on a steamer of the type in question, provided they have managed to secure the necessary co-operation of someone connected with the shipping firm. I should doubt very much if it would be possible for a lady to arrange a voyage without this backing. No member of the gentler sex need fear that she will be treated other than with the greatest courtesy by the officers of a "tramp" steamer; they may be a trifle rough at times, but they are quite as often diamonds.

SOME PRACTICAL ADVICE:—

I. Don't take a mountain of baggage.

II. A trip of this sort is a grand time for wearing up old clothes, especially old flannels. One pair of boots is enough, and take one or two pairs of light shoes or rubbers. If you want a deck-chair, take it with you, for there may not be any on the boat. If you possess a suit of oilskins, put it in your kit; then you can be on deck whatever the weather or the sea is like.

III. Rake up a bundle of old illustrated magazines or sixpenny paper-back novels; even if you don't want to read them yourself, the officers or

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the engineers will be delighted to take them, and they will not think worse of you if you leave them behind.

IV. Arrange for your letters to be sent to any ports at which you are going to call, care of the ship's agent, and then your mail will be brought aboard when the boat drops anchor, and you will be saved the trouble of going to the local post-office and trying to convince foreign officials that you really are yourself and none other.

V. Don't forget your camera.

Where to Go.—Presuming, again, that the schoolmaster intends to give himself a good sea trip during his summer holiday, he will find that a fairly wide field lies before him. Among the longer jaunts, the writer found the following western voyage a delightful experience:—From the Manchester Ship Canal (the foregoing adjective does not cover this portion of the trip) across the Atlantic, up the Gulf and River St. Lawrence to Montreal, spending a day *en route* at Quebec, where the boat called. At Montreal the steamer remained to discharge and to reload. There was ample time to proceed by lake steamer (passenger) to Toronto, to cross the lake to Queenstown at the mouth of the Niagara River, to go up by electric car to Niagara itself, and to spend the best part of a day at the Falls. A magnificent journey back by boat through the Thousand Islands and down the Lachine Rapids to Montreal again was possible in ample time to join the steamer still loading by the wharf. This holiday, I may add, can certainly be done on under twenty pounds, and lasts about five weeks. This is one of the most expensive "cheap" trips.

The Mediterranean is full of possibilities for the "tramp tourist." This is a suggested itinerary which is feasible for summer holidays (quarantine delays ever excepted):—A British port, across the Bay (it is somewhat maligned, so the writer thinks—he has had but one bad time in five crossings), southward within sight of the Iberian coast, Gibraltar, possibly touching at Algiers, Malta, Alexandria, Syrian coast ports, and home again by Cyprus and Malta.

What we may call a direct trip, say from the Tyne to Constantinople and back, is a variety. Other direct trips, easily done so far as time goes, are to some of the United States ports. In these cases the traveller gets a good sea holiday, but he may feel that the days are monotonous, though the daily kaleidoscope of sky, air, and water is a ceaseless miracle. The West Indies are almost to be included in the direct trips, too.

A Peep at Foreign Ports.—There is ample choice for those who want to see something of the land life in another country, as well as to get a taste of the "life on the ocean wave." This little trip occupied the writer just three weeks, and the needful expenses were well covered by a five-pound note. From the Tyne to the Thames with coal, two days discharging, thence to Bilbao, where the steamer remained about ten days in the river a few miles below the city. Only the press of boats seeking to load with ore kept us this length of time, but we were back in Middlesbrough within three weeks.

Another similar holiday went on these lines:—The steamer took coal to Gibraltar, went on from there to a small place on the north-west coast of Spain, where there was only an open roadstead. Here we loaded ore, and proceeded away for Rotterdam, coming back home to Hull. From the Tyne there are plenty of colliers, which will go out to such places as Genoa, Savona, or Palermo and back, thus giving the traveller a good "stretch off the land," and a few days on foreign soil into the bargain—this, too, at a price which, by comparison of railroad fares and passenger steamer rates, is absolutely ridiculous.

For quite short runs at cheap rates, there is always a swarm of traders plying out of the Tyne, the Humber, and the Thames to such ports as St. Petersburg, Bremen, Hamburg, Antwerp, Amsterdam, and elsewhere, though the accommodation in this case is rather more doubtful as regards comfort.

A Typical Day.—The absolute freedom of the life on a "tramp" will be one of the jolliest things for the tired teacher who ships as a "shilling a monther." If he wants to laze, he can do so; if he wants to read all day long, nobody will say him nay.

The mate on watch will send a hand to wake you any time after four a.m. (or earlier if you like). You can sail up on to the deck in your pyjamas and have a sniff at the morning breeze while your salt-water bath is filling, and, that done, come on to the bridge and chat with the officer on watch before breakfast. Nine o'clock should see you on deck again, perhaps with a pile of books or magazines, which you bear up to the bridge, where your chair is ready in the shade. The sea is blue and the sun is shining. The day is before you, and the mate on watch won't mind a yarn, and the "Old Man" himself will very likely come along for a chat. If that won't do, then go forard to the fo'castle head and watch the stem cutting crisply through the water and the school of porpoises tumbling around.

Much you can learn of the lore of the sea-gipsies as they pass now and again in their wanderings from port to port. Noon is here, and the skipper comes out to "shoot the sun" and establish the position of his ship; nor is this a dull happening if your soul has not lost its touch of romance. One can turn in for a nap in the afternoon and come on deck again when the sun has lost its strength a mite. At tea, the burden and heat of the day being over, the tongues of your companions in the saloon will be somewhat loosened, and you will all adjourn and smoke the pipe of peace on the hatch. Then the "Old Man" will tell yarns of his doings when he was an apprentice, and his officers will spin their "cuffers" and peradventure the chief engineer will join you, and, in broad Aberdonian, contribute his views on life, and tell of his manifold

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adventures on land or sea. The sun drops, drops, and the wings of night encircle all the water. The night breeze wakes, and there is silence, save for the seethe of the wavelets overside and the occasional "Lights burning bright, and all's well" of the man on the fo'castle head.

THE TEACHING OF IT ALL.—And at the end, when you are back to the daily battle once again, you realise that you did not "suffer a sea change" in vain. You have been with men, you have seen "the daily toil of gentlemen unafraid," you have talked and laughed with those whose lot is in great waters, and who "bear the wheat and cattle lest street-bred people die." No man can do these things and yet fail to feel that his mental horizon has been widened. He, "a man in the world of men," will have a better understanding of his brethren; he, to whose charge precious years of future citizens are entrusted, will have caught a fresh glimpse of the manifestation of the ocean power which rests with his native land. So will he himself the better understand, and thereby help his pupils to understand, that England really is the England of our dreams, and is still—

> This precious stone set in a silver sea,
> Which serves it in the office of a wall,
> Or as a moat defensive to a house,
> Against the envy of less happier lands.

ON THE EXAMINATION AND MARKING OF PRACTICAL WORK.

By HUGH RICHARDSON, M.A.
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THERE has not yet been any organised movement for persuading schoolmasters to work without wages; we need not, therefore, stop to consider the suggestion that in an ideal school the boys would work without marks. Where both the quality and quantity of the work can be measured, some form of piece-work, or payment by results, would seem the justest way of marking. Further, when we are introducing our pupils to any new kind of work, such as practical science, it is important to secure thoroughness and diligence throughout the class from the very beginning; and to this end we may take over many methods of stimulus and discipline, the values of which have been tested in other fields.

It is impossible to mark answers unless the questions set have been definite; but definite questions may be set so as to elicit answers of various forms. We shall have to deal not only with written compositions, but also with measurements, calculations, statistics, plotted curves, drawings, diagrams, apparatus, specimens, &c. Indeed, it is part of our object to evoke answers in a great many different forms. As some of these forms are new to the teacher as well as to the scholar, it is useful for us to discuss the best way of marking them, in order that the teacher may be alert in discovering a right method in each case, and that the class may not feel discouraged by want of prompt recognition of good work.

Boys are as voracious of mental as of physical food. It is not enough to tell a class to measure the diameter of a halfpenny, and expect them to be quiet and orderly for an hour. There should be a superabundance of exercises sufficient to retain the interest and direct the energies of everyone for more than an hour. If these exercises are short and simple, it is the more important for the teacher to have a list of answers ready. If the experiment is more difficult, then repetition and averaging of results will keep most boys employed, and allow the teacher leisure to assist those in difficulties.

HEADS AND TAILS.—We may get some help in this matter by a study of the theory of a penny thrown into the air. There are two alternatives —"head" and "tail"—which appear equally probable in its fall. If the penny is thrown three times successively, then the eight possible sequences appear to be—

H H H	3 heads	once.
H H T, H T H, T H H	2 heads and 1 tail	thrice.
H T T, T H T, T T H	1 head and 2 tails	thrice.
T T T	3 tails	once.

And as each of these eight sequences appears equally probable, we may say that the numbers 1, 3, 3, 1 measure the probabilities of our getting 3 heads, 2 heads, 1 head, or 0 head after spinning a penny three times. The result is confirmed by experiment. For a class of 22 boys, in which each pair of boys spun a penny 64 × 3 times, the averaged results were—

3 heads	in 3 tries	1·10 times.
2 „	„	3·07 „
1 head	„	2·78 „
0 „	„	1·03 „

numbers which are nearly in the ratios of 1 : 3 : 3 : 1. It may be noted for reference that these numbers are the coefficients in the expansion of $(a+x)^3 = a^3 + 3a^2x + 3ax^2 + x^3$.

CURVED LINES.—Suppose that the measurement of a curved line is made by a thread in 10 steps, and (for the sake of argument) suppose each step is measured either correctly or with an error of 0·01 inch. Then the total length will be wrong by as many times 0·01 inch as there were steps incorrectly measured. If we suppose that the "errors" 0·00 and 0·01 are like heads and tails each equally probable, then it becomes possible to set out diagrammatically all the possible chances. Thus:—

	Total error
·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00 ...	0·00
·01, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, and there will be altogether ten different stages at which a single mistake of 0·01 would produce the same total error	0·01

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The case of two errors of 0·01 each may be explored by the methods of permutations of 2 things in 10 places, showing that a total error of 0·02 may occur in $10 \times 9/1 \times 2 = 45$ different ways.

Or, more briefly, we may use the coefficients in the expansion of $(a+x)^{10}$, viz., 1, 10, 45, 120, 210, 252, 210, 120, 45, 10, 1, to show that—

Total error of	0·00	can occur in	1	way.
„	„	0·01	„	„	10 ways.
„	„	0·02	„	„	45 „
„	„	0·03	„	„	120 „
.	.	.	.	.	.
„	„	0·09	„	„	10 „
„	„	0·10	„	„	1 way.

Then, when we know the probabilities of certain total errors of known magnitudes, we can form some judgment as to how many boys are likely to get such answers, and what marks they may deserve.

SORTING DRAWINGS.—Suppose we have a pile of drawings to mark in which the question has been set to test exact geometrical draughtsmanship. We can easily sort the drawings by eye into three heaps—good, middling, and bad—of which the middling heap will probably be the greatest. Each heap may be subdivided into three smaller heaps in the same way. It is an assistance in delicate discrimination to have a correct copy on tracing-paper, to be laid over the drawings to be tested. We have now nine heaps; revising these, some adjustments will be made, and the best drawing and the worst drawing may be picked out to make two more heaps—total, 11 heaps. To these we may assign marks—10 to the best, 9 to the next best heap, and so on down to 0.

The theory of errors would suggest that the number of papers in each heap should be proportional to the coefficients of $(a+x)^{10}$ already alluded to. Then, among $2^{10} = 1024$ papers,

1	paper	would get	10	marks.
10	papers	„	9	„
45	„	„	8	„
.	.	.	.	.
1	paper	„	0	„

Probably most teachers of experience will agree that extreme marks should be given less often than medium marks.

MARKING ON THE BLACKBOARD.—It is often interesting to have answers read out by the class and written up on the blackboard. Perhaps when this is first done the numbers from a burette experiment may seem in hopeless confusion—all sixes and sevens:—6·3, 7·8, 6·1, 6·8, 7·4, 6·0, 7·9, &c. In that case it may be best to reject all and to give no marks. The experiment may be discussed again, possible mistakes suggested, and devices invented for guarding against them. Then, after the next lesson, an improved set of numbers will appear, such as:—6·3, 6·6, (6·9), 6·4, 6·5, 6·4, 6·3, 6·4, 6·5, 6·6, 6·5, 6·4, (6·0), 6·4, 6·5, &c.—almost all between 6·3 and 6·6. These we deal with (i.) by bracketing outlying numbers as practically certain to contain large and peculiar errors; (ii.) by averaging the rest; (iii.) the remaining answers are then marked, beginning with the highest marks for those answers which lie nearest to the mean value, and with descending marks for answers a little too great or too small. We shall have to decide what the highest mark is to be (perhaps 20 for an hour's work), and how many of the answers are to come within marking limits (? all those contributing to the average).

SCALE OF MARKS.—Then we need some sort of a scale of marks. For this purpose theory suggests the scales from the coefficients of $(a+x)^2$, $(a+x)^3$, $(a+x)^4$, &c. If it is a simple geometrical question, as "Measure the diagonal of a square with side 2 inches" (answer really 2·828+), we may mark roughly by 1 : 2 : 1, viz.:—

2·84	inches	1 mark
2·83	„	2 marks
2·82	„	1 mark.

In other cases we shall find the scales

1, 3, 3, 1;
1, 4, 6, 4, 1;
1, 5, 10, 10, 5, 1; &c.

more useful, as having higher maxima and embracing a larger number of answers.

MARKING BY POPULARITY.—But in practice with a large class, when the errors are certainly small and of unknown origin, we shall find that the number of boys obtaining a particular answer is often a clue to the number of marks to give for that answer. Thus, if

2	boys	have	answer	6·3
12	„	„	„	6·4
9	„	„	„	6·5
1	„	„	„	6·6

then we shall not be far wrong in giving each of the 2 boys 2 marks, each of the 12 boys 12 marks, and so on.

This seems mere marking by popularity, but the idea is founded on the theory of probabilities. It is, of course, open to abuse; and if collusion or cooking is suspected the practice must be abruptly interrupted, either by using a standard answer (atomic weights are standard answers), or by the teacher using his own answer (*e.g.*, a Twaddell determination of the S.G. of sea-water to mark specific gravity bottle determinations), or by setting some question in which the average is not the most probable answer (*e.g.*, the height of the barometer).

The practice of referring to standard answers is dangerous—*e.g.*, the sea-water used may not be of the same strength as that described in the books; the sand may not be pure silica; the thermometers may have shifted their zeros since they were graduated.

HEIGHT OF BAROMETER.—But the mathematical theory of errors is founded on the assumption that the errors are all equal, all equally probable,

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equally likely to be + or −, infinite in number, but each infinitesimal in magnitude. In practice this is hardly the case. Suppose the class have been asked to set up mercury barometers, and to measure the "height of the barometer." The universal mistake is the inclusion of a small but variable amount of air, and the corresponding error is always minus depressing the answer. The capillarity of the tube is again a universal minus error; and if the tubes are of equal diameter, these capillarity errors will be equal throughout the class, and require from the teacher some discretion in using a wide-tube Fortin barometer to test answers.

Less common mistakes will be the inexact adjustment of the bottom of the scale to the surface of the mercury, or the treatment of eighths of an inch on the scale as tenths.

In judging the answers, the greatest is more likely to be right than the average, because the chief error is a depression from the limiting value of the true height.

The theory of errors is not to be pressed in opposition to experience, but the divergence of answers from the distribution expected according to theory should help the teacher to detect the actual mistakes which his pupils are making. The best way to detect cooking is to examine, not the final answer, but some intermediate stage of the working.

PLOTTED CURVES.—The testing of diagrams plotted on squared paper is easier when the teacher has an accurate mental vision of some of the commoner curves, such as the hyperbola or the sine wave curve. Where the figures are theoretical, like those in the *Nautical Almanac* or the "Admiralty Tide Tables," the curves ought probably to run quite smoothly. All lumps or corners will be open to suspicion. Averages from observation (such as mean monthly temperatures) may be a little lumpy, and daily records can only be shown as zigzags; but extreme points are still open to inquiry.

When precise directions are given as to the scales to be used on the axes, the curves drawn by the whole class from a common source should be exactly alike, and the eye or tracing-paper will quickly detect mistakes. The teacher's time is saved in this case, but of course, as a mental exercise, the work is better when the pupil has to arrange his own co-ordinates. The teacher must then be prepared to recognise a curve when it is upside down or inside out.

ARITHMETICAL MISTAKES.—Of arithmetical mistakes it is hardly necessary to speak, except to point out that some multiply and others diminish the initial error of experiment. For instance, in averaging the barometric readings for a whole month the final division by 30 would reduce to 0·03+ in the average an error of a whole inch in a single observation. Hence averages which are nearly correct may demand keen criticism. Again, the calculation of the weight of 1 litre of a gas from the weight of a small flask full is a multiplication, and if the weighings are not right to within 0·01 gram the answers will be still less trustworthy.

LOOSE PAPER OR NOTE-BOOKS.—For the quick comparison of written work, it is a great advantage to have it done on loose papers, not in note-books. *Per contra*, the standard of neatness is more easily kept up in note-books. As a compromise, the work may be submitted first on loose paper, and afterwards copied if found correct; or, if originally done in the note-books, these may be marked for neatness, completeness, and arrangement; but numerical answers may be read out by the pupils, and written on the blackboard for public inspection and comparison prior to marking. In any case, numerical answers should be kept confidential until all the work of the class has been submitted.

VIVA VOCE.—If the literary style of written answers needs attention, it may be good practice to hear some *viva voce* answers, asking the class for careful, deliberate speaking. The marking of single *viva voce* answers out of 5 as a total (instead of 1 or 0, as is usual) may be made a great encouragement to clear speaking, complete sentences, and to any special literary style we wish to encourage.

SPECIMENS AND APPARATUS.—Specimens may be shown upon small sheets of paper clearly labelled. If these are arranged in trays, all the crystals in one tray, all the precipitates in another tray, and so on, they are easily marked by comparison. Sometimes quick tests (*e.g.*, with litmus paper) will show whether the specimens are pure.

To encourage tidy working at laboratory benches, it is occasionally desirable to walk round and allot marks, say, by deduction from 10, according to the amount of slop, mess, and needless apparatus on the bench.

THE PHONOGRAPH IN MODERN LANGUAGE TEACHING.

By the Rev. A. H. FISH, B.A., B.Sc.
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THE articles by Prof. Rippmann and Dr. Rouse in the April and May numbers of THE SCHOOL WORLD suggest that some further experience of the use of the phonograph may be interesting to teachers. My own acquaintance with the subject dates only from the last summer holidays, and for that and other reasons my knowledge is very far indeed from being that of an expert. I had already found some acquaintance with phonetics exceedingly useful in regulating and supervising the French teaching in my own school, especially in the case of the many boys (and teachers) whose ears were not sufficiently quick, or whose interest was not sufficiently keen, to enable them to learn by simple imitation of a native teacher. But I found myself still confronted by several difficulties. The first was the apparent want of uniformity of pronunciation among native Frenchmen. The second, the much greater want of uniformity in their ex-

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planations of our mistakes. The third was the impossibility of getting anything like enough correctly pronounced French to train my own ear to analyse differences which, I felt, existed, but which I could not permanently fix.

I had begun to think of the phonograph as a possibility, when chance threw in my way the opportunity of which I am about to give some account. Early in August of 1905 I found myself in the town of Grenoble, with four or five weeks to spare and no definite plan for their employment. I had always fought shy of holiday courses, but an examination of the Grenoble syllabus, and especially the announcement of the Laboratoire de phonétique expérimentale, directed by M. Théodore Rosset, Maître de Conférences de philologie française, open daily from 6 a.m., decided me to devote to work a holiday which should have been spent on the Alps of the Dauphiné. A holiday course at one French University is probably, with the exception of the Laboratoire de phonétique, very like that at any other. Therefore I will say nothing about the courses provided in literature, nor of the many excellent lectures, which, when not too somnolent from the heat, I heard to my advantage. Of M. Rosset's course on French philology and phonetics, of which, extending as it did over three months, I heard only a part, a word must be said. German in thoroughness and originality, French in lucidity and grace, these lectures were among the most instructive and stimulating I ever heard. Much of the matter, though new to me, would doubtless have been familiar to students of French philology, but the lecturer's use of the "mot phonétique" (the phrase pronounced as one word) to explain difficulties of sound-change and accent-change would, I fancy, be new to most. The majority of the students were from German and Italian Universities; many were French, a few Russian, and still fewer, perhaps not more than half a dozen, English.

At one end of a long deal table in the Laboratoire de phonétique there was a large Edison phonograph, manipulated by a courteous and ever-smiling attendant; from the phonograph, long branched glass and rubber tubes, terminating in pairs of ear-caps; round the table, each with a book in front, and ear-caps in place, a dozen or so men and women; you enter, take your seat, and put on your ear-caps; the attendant indicates the number of the piece being reproduced; when your turn comes, you choose the piece; you can have it repeated a second or a third time. There is a large selection, but the favourites number perhaps a dozen. Thus you hear the same pieces again and again, till you know them by heart. You come and go as you please.

Each student taking the class purchases a book of coupons. Each coupon, costing fifty centimes, admits him to a reading-lesson, in which the student is taken individually by a demonstrator, and reads for about fifteen minutes the extracts which he has previously heard on the phonograph. The demonstrator corrects, criticises, explains. After a certain number of such lessons have been taken, and a certain progress made, the aspirant is allowed to read to M. Rosset, who gives further advice. Always one is sent back to the phonograph. "Ecoutez, toujours écoutez." "Le même morceau—cinquante fois?" "Ce n'est pas trop, monsieur."

It might be thought that such a process would soon weary the most enthusiastic student. On the contrary, the more one persevered, the more one became interested. In the first place the extracts in M. Rosset's book are admirably chosen, and are of great literary interest. Secondly, as one's ear became opened and one's tongue loosed, the perception of real progress amounted to a keen pleasure, and one worked at one's faults with increasing determination.

Then there were additional attractions, in the shape of demonstrations by M. Rosset, in which we took part. We were shown how to construct the artificial palate, to take wax models, and construct for ourselves and use artificial palates. We recorded the idiosyncrasies of our national and provincial pronunciation of vowels and consonants on smoked paper revolving on a drum. We compared these against the trace made by M. Rosset. The eye aided the ear in correcting our faults. If with all this we still failed to hear or produce a pure sound, there were other resources. Silver wires, bent into various shapes, and sterilised in a Bunsen flame, were introduced into our mouths, and the tongue thus compelled to its proper position. In my own case the é fermé (under the tonic accent), as in donné, was the chief offence. It was quite free from the objectionable diphthongal intonation, and I passed my demonstrator all right. But M. Rosset would have none of it. He insisted that my é fermé was the é moyen (as in léser), or the first é in été, and when I failed to hear, as well as to vocalise, the difference, he compelled me to do so by means of the wire before mentioned. Unfortunately, I am on the wrong side of forty, and I am afraid that, except perhaps in slow reading, my é fermé will ordinarily remain é moyen. But at any rate I can *hear the distinction.*

The book of exercises compiled by M. Rosset and used at Grenoble deserves a few words. It is published by, and may be obtained from, the Librairie Gratier, Grenoble. It consists of two parts. The first contains exercises upon the pronunciation of vowels, consonants, &c., and comprises seventy-two pages. The second contains extracts of from one to two pages each from modern French authors—Renan, Taine, Pasteur, Anatole France, Theuriet, Loti, P. Bourget, Rostand, Verlaine, Alfred Capus, Maupassant, Edouard Rod, and many others. On the opposite page is given a phonetic transcription, which has certain peculiarities. The notation adopted is essentially that of the Abbé Rousselot, and is devised solely with regard to the needs of French phonetics. It has, therefore, for the student of French simply, many advantages over that

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of the Association phonétique internationale. Secondly, it has this peculiarity: that the words are grouped in "mots phonétiques," *i.e.* the words which in pronunciation are sounded as one word are written as one; *e.g.* Le but du monde est le développement de l'esprit, et la première condition du développement de l'esprit, c'est sa liberté, appears as

lœbudumõd èldevlopmãdlespri, elaprœmyèrkõdisyõ dudevlopmãdlespri, sèsaliberté.

M. Rosset was good enough to make a number of records for me. These are, of course, made direct. Mechanically, they are not always perfect; a few words are occasionally blurred. But the voice reproduction is admirable, and they are by far the pleasantest and most clearly articulated records I have come across. I also obtained a set of the Cambridge series (Mrs. Frazer's). These are also direct, that is, not moulded, records. They are not so good as the first mentioned, but I have found them useful to boys in preparing French repetition, and the pronunciation of the boys has been distinctly improved by listening to them. Two points must, however, be attended to. First, the record should, if possible, be heard through rubber tubes and ear-pieces. By means of glass or ebonite forks this can easily be arranged, so that a number of boys can listen at once. Secondly, it is most important that the speed of reproduction should be as nearly as possible that at which the record was made. If this is not attended to, a most unpleasant effect is produced. This is particularly the case when the speed is too high. The voice then becomes most disagreeably shrill and *nasillarde*. I have seen a few turns of the regulating screw change an expression of pained horror on the face of a Frenchman to one of satisfaction, if not gratification.

To turn to other records. Some of those supplied by the Pathé Company seem to us very good. There are three scenes from Rostand, *Cyrano de Bergerac,* declaimed by Duparc, which are particularly free from phonographic defects. With some little hesitation I direct attention to a remarkable effort in the direction of what may be called, perhaps, the phonographic teaching of languages, which comes from America. These are the courses provided by the International Correspondence Schools, Scranton, Pa. These comprise elaborate courses in French, German, and Spanish, and are designed for self-instruction. They can only be obtained in complete sets, comprising Edison phonograph, thirty-two records, with four text-books, viz., conversational lessons, grammar, reader, and dictionary in each language. The price of each set is £10 10s. The larger part of this cost is due to the phonograph, which is very completely fitted for recording, as well as for reproducing. It has also a special repeating device, which is useful. When one set has been obtained the cost of the phonograph is deducted from the price of the others. I possess the French and German courses, and have made a pretty thorough examination of them. The type, printing, binding and get-up of the text-books are of an excellence quite unusual in such cases in this country. They are a delight to handle, and an ornament to any book-shelves. The volumes containing the conversational lessons commence with very full instructions for the use and care of the phonograph, and for the making of records.

Each lesson which follows consists of a vocabulary, followed by a set of phrases and sentences. These are found on the corresponding record. Then come explanations and remarks. These are followed by several pages of *viva voce* drill, in which the words and sentences previously given are combined in a great variety of ways. Next we have a couple of pages of review and conversation, in which some fresh words are introduced. Finally, an exercise is given, consisting of phrases to be altered and questions to be answered, the alterations and answers to be recorded on a "blank," and sent to the authors for correction. I speak diffidently of a subject on which I make no claim to be an expert; but I have, unfortunately, a very large acquaintance with English text-books for the study of French and German, and these American books, apart from their special features, compare most favourably with any I know. The English is excellent; there are scarcely any Americanisms; and though extremely suspicious of books of this class, I have failed to detect any serious mistakes. The cylinders are moulded in the Edison factory, and are mechanically nearer perfection than any others I have tried. With regard to the pronunciation (I speak now only of the French), I hesitate to express an opinion. The cylinders *must* be used at exactly the right speed, which is given. When this is attended to, certain defects disappear; whether any remain, and, if so, how far these may be inseparable from phonographic reproduction is at present a matter of discussion between myself and my French master. I should not hesitate to recommend the entire set to any private student desirous of learning French, and if I had time to learn Spanish I should certainly at once procure the books and cylinders for that language.

The whole enterprise is a very remarkable one, and is certainly worth the attention of English teachers and students of languages. The I.C.S. Association, Chancery Lane, London, are the English representatives, and will be very glad to give inquirers an opportunity of hearing the records.

Mechanical reproduction of speech will not supersede the living teacher, but it will undoubtedly help his work. In the first place it will, if he be an Englishman, immensely help to keep his own pronunciation of French or German up to the mark, or, better still, in a condition of improvement. When a language has been learned in childhood it may be possible to keep its sound-forms instinctively permanent, so that they will resist the erosive influence of the constant use of another speech for a long time. But even to this,

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as is well known, there are limits. French spoken by Frenchmen who have been long and continuously in England is much more easily understood by Englishmen that that spoken across the Channel. Boys who, having learned from a French governess, pronounce almost perfectly at ten or twelve, come home from public schools with an accent increasingly British. English modern language masters who have resided perhaps one or two years abroad lose in the absence of an audible standard their sense of the finer distinctions, which they have acquired. No form of teaching which depends upon the exercise of the senses can long resist a process of degradation, in the absence of a standard to which one can resort. The private use of the phonograph, then, appears admirably calculated to keep the teacher's ear alive to the distinctions he has acquired, until he can perhaps again refresh it at the original source.

Secondly, I have found an *occasional* use of the phonograph in school to be very useful.

It brings into the class-room, as it were, a breath of French atmosphere, and intonation, pitch, and articulation immediately and unconsciously become less English and more French. I do not think, however, it ought to be used too often. Its regular use is only adapted to keen, persevering, and discriminating boys, who might perhaps be allowed to have voluntary access to it.

Again, it gives the class, and this is by no means to be despised, a certain confidence in their English teacher, and this the more as they notice the closer approximation of his French to that of the phonograph. Further, few of us are perfect or nearly perfect, and I think it is only fair to tell the class, or let the quicker of them find out their teacher's own faults. This has happened more than once in my own case in preparing lessons with the boys, and in every case reference to the French master has supported the phonograph. It may be said, Why not make the reference without the phonograph? The answer is that it is exceedingly difficult to get the necessary repetition of the same unvarying sound. It is the singer's resort to the piano for a note. It gives no trouble, and it does not vary.

Limitations, of course, there are, and possibly some dangers. There is a tendency in too close imitation of many records to a most unpleasant nasalisation or *voix nasillarde*, which seems to be a not uncommon defect among uneducated Frenchmen, and for this and other reasons I would certainly deprecate its use in class by a teacher whose own ear had not become fairly accustomed to good French. Further, as Prof. Rippmann has pointed out, it must not be supposed that, at present at all events, the phonograph can be used as a kind of dictionary for the pronunciation of isolated words. Most of the extracts available are spoken too fast for that. But some exercises which I possess, and some of the vocabularies in the American series referred to above, go very far in this direction. It is not a matter of the rate of the phonograph, but of the rate at which the word is spoken. But in my opinion the pronunciation of isolated words by a beginner is a matter for close imitation of the position of the vocal organs of the teacher, which is impossible in continuous spech. If a good teacher cannot be obtained, of course, the phonograph is the best substitute.

A HISTORY OF THE SIXTH CENTURY.[1]

THIS is the first volume of a monograph devoted to the life and times of Justinian. There is no doubt as to the importance of the subject; but, like the rest of Byzantine history, it has been somewhat neglected in this country, and, indeed, those books of Continental scholars which deal with it are apt to confine themselves to one side of a many-sided reign. The name of Justinian, of course, suggests in the first place law, and, while the legal side has been naturally from its importance often dealt with, historical and social questions have been left somewhat in the background. Mr. Holmes has not left these out of the account, as may be seen by the headings of the various sections—History, Topography, Sociology, Political, Educational, and Religious. Under these six heads, contained in two chapters, the state of Constantinople and the Roman Empire in the sixth century is sketched. The other two chapters describe the careers of the Elder Justin and Theodora. There are two maps—one of Constantinople in the sixth century, and one of the Roman Empire. Mr. Holmes has gone straight to his authorities, and his statements are supported by a large number of notes and exact references. His descriptions are clear, instructive, and generally interesting. We regret to add that his style is somewhat pretentious, and there is too much of what we may call (not to put too fine a point upon it) "tall talk." It gives one a little shock to read of "snakes emanating from the gorgon's head," or "garments of great tenuity." There is often over-emphasis in the statements, and a certain amount of padding-out in the notes. Thus, the note on p. 1 would be better away, and the note on p. 2 about modern Greek newspapers is ludicrously wrong. Mr. Holmes can hardly have read any of them, if he really thinks that an Athenian of the age of Pericles could read with facility that monstrous jargon. But notes like these are rare, and we are glad to say that the notes show sound judgment as a rule, in spite of their exaggerated style. We would instance p. 100, note 4, which discusses the meaning of the word *follis*, and shows that the statements made by Milman, Bury, and others as to the colossal sums distributed by the Emperor are due to misunderstanding.

Most of this book is introductory. The hero proper will follow in the succeeding volumes. The reader whose knowledge of the Roman Empire

[1] "The Age of Justinian and Theodora: a History of the Sixth Century A.D." By William Gordon Holmes. Vol. i. 363 pp. (Bell.) 9s. net.

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ends with Tiberius, or, at most, with the Antonines, will be particularly interested in the descriptions of Constantinople and its life. A good deal has been written about the topography of the city, so that Mr. Holmes's sketch, good though it is, and founded on independent study, does not fill a gap so obvious as that of the social conditions. But the excellent account of the people will be very welcome. Men and women walk the streets, in their habit as they lived, following their business and their pleasure, or backing their favourite horses, so that we almost see them before us. Valuable, too, is the sketch of religion, so far as it touches the Roman Empire, although we think it quite unnecessary that he should out-Gibbon Gibbon in the criticism of Christianity. Mr. Holmes cannot away with miracles, and in Biblical criticism he seems to follow the extreme German school, or schools, of sceptics. There is a different kind of interest in the romantic career of the Empress, which reads like a fairy tale. We shall look forward with interest to the succeeding volumes.

THE ENTENTE UNIVERSITAIRE.

AFTER the entente diplomatique, the entente municipale, and the entente médicale, comes the entente universitaire. The first step towards the important goal that has been reached was taken by Miss Williams, the directress of the Guilde Internationale in Paris, when she invited the Modern Language Association, at its annual meeting in December, 1903, to visit Paris at Easter, 1904. This visit still remains a very pleasant memory with all those members who were on that occasion the guests of the Guilde and of the Société des Professeurs de Langues vivantes. The Modern Language Association felt that they could do no less than return the hospitality that had been so generously offered them. The pourparlers for a return visit in 1905 came to nothing, but by issuing the invitation to our French colleagues earlier this year, and by inviting the University of London to join in receiving them, the Modern Language Association has acomplished its desire. The University extended the invitation, not only to the Guilde and the Société, but to the Ministère de l'Instruction publique, the Université de Paris, and the Collège de France. Directly the Vice-Recteur of the University of Paris—Monsieur Louis Liard—signified his acceptance, the success of the visit was assured, and more than 200 representatives of French education had landed on our shores by June 2nd. Among these were MM. Bayet and Rabier, directors of superior and secondary education respectively; MM. Hovelaque and Firmery, inspecteurs-généraux; MM. Appell and Croiset, deans of the Faculties of Sciences and Letters; MM. Morel, Garnier, and Delobel, of the Société des Professeurs; and Miss Williams and M. Gautier, of the Guilde Internationale.

If anything, the hospitality extended to our guests has been too hearty, for some of them must have found London as tiring as M. Loubet did when he spent four days here in 1903. After their arrival on Whit Monday the guests of the University were taken to the Royal Palace Hotel, while the Association held an informal reception at University College. On Tuesday the formal business of the visit began with a reception at the Foreign Office in the morning, where our visitors were welcomed by Lord Fitzmaurice, who speaks French as well as his brother, the Marquis of Lansdowne, and by Mr. T. Lough, Parliamentary Secretary to the Board of Education. There followed lunch at the University of London, presided over by Sir E. Busk, the Vice-Chancellor, at which M. Hovelaque showed his complete knowledge of our idiom in a most felicitous speech of thanks. It is an open secret that it is due to him in France, and to Dr. Heath on our side, that the official interest in this visit was aroused. The lunch was followed by four addresses in the Great Hall. Sir Edward Busk spoke on the debt of English universities to that of Paris; M. Liard explained French secondary education; Sir Arthur Rücker, with his usual clarity and incisiveness, dealt with the recent history of the University of London; while Prof. Michael Sadler, one of the few orators who can arouse enthusiasm on education in this country, spoke of French influence on English education in a speech overflowing with good points, but which had unfortunately to be cut short owing to exigencies of time. In the evening the Association gave a dinner to some of their French colleagues at the Trocadero, while others were entertained privately.

On Wednesday visits were paid to Westminster Abbey and School and to other schools; lunch was taken at Mr. Evan Spicer's at Dulwich, where the school was also visited; and in the evening a reception was held at the French Embassy.

On Thursday there were addresses at the University by M. Croiset, M. Appell, Prof. E. A. Gardner, Dr. A. Waller, Sir William Ramsay, M. Léger (secretary of the Collège de France), M. Benoist (Rector of the University of Montpellier), and M. Morel. In the afternoon the King again showed his diplomatic interest in the entente by receiving the University's guests at Windsor, while those of the Association attended a garden-party at Holloway College. In the evening there was a conversazione at the University, and on Friday the official proceedings closed by visits to Oxford and Cambridge, although several of our guests determined to stay longer, induced, perhaps, by the fine weather they experienced.

The results of this visit must be far-reaching. To those who have never visited these shores it will show that England does not always take its learning sadly, however it may take its pleasures. The scheme for the exchange of teachers must receive a great impulse; the London University holiday courses under Prof. Walter Rippmann's direction will receive an impetus; while in starting and renewing friendships between the teachers of both countries it will cause French and English boys and girls to be influenced for peace and mutual comprehension at a most impressionable age.

Great thanks are due to the Reception Committee for all its hard work, to the chairman, Sir Walter Palmer, to Messrs. F. Storr, A. E. Twentyman, Cloudesley Brereton, and especially to the secretaries, Messrs. P. J. Hartog and W. K. Hill.

Junior Experimental Science. By W. M. Hooton. viii.+260 pp. (Clive.) 2*s.* 6*d.*—Mr. Hooton and his colleagues have found that, in the absence of a good class-book, their teaching has proved unsatisfactory, and this volume has been prepared in the hope of saving time and obtaining better results. The book covers the amount of physics and chemistry usually taken in the first two years of a systematic course of science in secondary schools working under the regulations of the Board of Education. The didactic method is adopted, and the explanations are clear and concise. All the illustrations are diagrammatic, and many are too small. Chemical symbols and chemical equations are given much too early in the chapters on chemistry.

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HEADMISTRESSES IN CONFERENCE.

The annual conference of the Incorporated Association of Headmistresses was held on June 8th and 9th at the Clapham High School. Miss F. Gadesden (Blackheath High School), president of the association, delivered the presidential address, and subsequently moved the adoption of the report.

Miss Connolly (Haberdashers' School, Hatcham) opened a discussion on women's suffrage, and proposed a resolution. The debate was well sustained, and resulted in the adoption of the following resolution:—That, in view of the fact that women are directly interested and engaged in the work of education, which is now under the control of the State, it is of ever-increasing importance, on educational as well as other grounds, that sex should no longer be regarded as a barrier to the exercise of the suffrage.

The desirability or otherwise of afternoon school was the next subject before the meeting. Miss Burstall (Manchester High School) moved the resolution, which was eventually adopted unanimously:—That this conference earnestly deprecates any attempt to force compulsory afternoon session on schools now working successfully under the system of a morning session, and unhesitatingly affirms its belief in the principle of freedom for the authorities of each school to arrange the hours of work in accordance with what they have found to be the physical, mental, and social needs of the pupils.

Miss Burstall urged that the arguments for the morning session are the claims of the home, the importance of girls returning home by daylight, their health during the period of growth, and time for organised games or for art-study and music. The claims on girls out of school hours are greater than those on boys, with a corresponding increase of pressure. The attack being made on the long morning has, by a mixture of easier and harder subjects and the system of the interval, been satisfactorily met. It is true there is a strain on the teacher, but that can be minimised by the variety of the work. The ideal of the high schools is, said Miss Burstall, freedom and responsibility—responsibility of the girl for her work, of the mistress for her teaching, of the head for the management. They had, she said, inherited this tradition—they must be true to the trust.

A rider was subsequently added to the resolution:—That this conference instructs the Executive Committee to draw up a memorial on this matter to the Board of Education, and to support it by statistics.

Among the discussions of the second day, that dealing with the kinds of training available for women secondary-school teachers was of particular interest. A resolution proposed by Miss Gavin (Notting Hill High School) was subsequently adopted:—That this association accepts no system of training as satisfactory in which the theoretical work of the student is not supplementary to the practical work.

Miss Gavin said that much now passing current as training is not training, and brought much discredit on the name. The association ought to demand that after a year's training a student should be able to teach in some measure, and not merely take an intelligent interest in her profession. The apparent success of the training given in the training colleges for elementary teachers led to the adoption of a somewhat similar form when the question of training secondary teachers arose thirty years ago. When the young graduate of to-day finishes her university course she knows nothing less than she knows children. What she requires is an opportunity of becoming familiar with children. The training college fails to provide this opportunity, even whilst it affords a practising school; a demonstration and practising school, or an opportunity of practising in ordinary schools, elementary and secondary, are necessary.

The question of the abolition of the Teachers' Register led to a long discussion, and numerous resolutions were adopted, some of which are referred to in an article on the subject in another part of this issue. The conference was brought to a close by papers on some recent experiments in education read by Miss Coulter (James Allen's School, Dulwich), Miss McCroben (Wakefield High School), Miss Gray (St. Paul's Girls' School), Miss Leahy (Croydon High School), and Miss Escott (Sheffield High School).

CONFERENCE AT THE HOME OF EDUCATION, AMBLESIDE.

By A Special Correspondent.

A conference of members of the Parents' National Education Union was held at Ambleside on June 2nd and 4th to discuss the advisability of introducing syllabuses and lists of books to the notice of schools and headmasters. Scale How, Miss Mason's house, has been the scene of many conferences, and for many years there have gone forth from it governesses or teachers of a marked type. We suppose the Parents' Union would not object to our assigning them this motto, if, indeed, they have not already seized on it, "*Debetur puero reverentia maxima.*" The teaching and training done in this retired Home of Education in the circle of the hills are as old as the hills themselves, but the re-statement of the system requires to be made continually. To watch children and let them unfold, to keep them thoroughly fascinated over books and things, to teach them the use of their eyes, hands, muscles, to make them see a good picture, and interpret a sonata, and paint an ivy-leaf, and mend a bicycle, and bind a book for themselves, is nothing but common sense; but as yet we do not attain unto it. A small number of persons interested in children—parents, headmasters, headmistresses, school inspectors, and wandering theorists—were assembled to see the work of the students, and to talk over the possibility of extending such work.

Saturday morning was devoted to discussion of the rights of children, of the uses of examinations, and of the limitation of time spent on the classics. Resolutions were not voted on, but the speakers all deprecated cramming and uninterestedness—as speakers invariably do.

On Monday we saw specimens of work. Most of it can be seen elsewhere, but not the nature-study books. These are peculiar to the place; and if no teaching or little teaching is done, the secret of these books is not yet revealed. A girl who cannot paint or draw sets down what she thinks ought to be set down, and dismal is the failure. She is told to set down what she sees, and these books are the result. Mr. Ablett, who always preaches that we do too much teaching of drawing, would here be justified, and it would be a boon if one or two of these note-books could be reproduced and sold *as specimens of work done by the untaught.* If you ask for information you get this reply, which does not help you: "It is all quite different here." A French and an Italian lesson on rational lines were given, and the conference began again with a speech from Mrs. Franklin, the able secretary of the union. The note of the speech was the recognition of our discontent with modern education, primary and

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secondary. Bridge and hockey, hooliganism and lady golf received the lash. Can nothing be done to increase the intelligence and the mind of nursemaids who neglect infants and mothers who neglect nurseries? Only by books and widened interest could we hope to succeed.

The prevailing note in the following speeches was (i.) the praise of Ambleside methods by those who had tried them; and (ii.) the unwillingness of the actual educator in school to be bound by any syllabuses or lists of books. Individualism was evidently the one thing which many speakers would not part with, and the union was twitted with a desire to preach Collectivism, while itself was entirely individualist. The usual gibes at examinations, the usual condemnation of existing books, followed; but we wonder why teachers do not write their own books, and prevent their pupils from being examined. Surely it is not the examination that is at fault, but the style of examination; not the book, but the reliance on the book. Good books there are, but they are expensive, and as such are quite unfitted for schools where children assemble in their hundreds. The good teacher is still the desideratum; and even when he is obtained, his apparatus, which we have only begun to demand, must be at his elbow. Well might a letter from an outspoken absentee say that children's dislike of literature is fostered in the school.

The trend of the resolutions passed showed that confidence in the method outlined, and willingness to profit by the experience of Scale How, existed in many of those present. In the evening a further paper on the union was read by Mrs. Franklin, and a student gave an essay on Goethe, to illustrate which other students read and sang.

The success of this Home of Education is that of an influence. Whether this influence be local or personal, or whether it be that, freed from conventional trammels, the student mind has time to think, a stranger cannot say; but no kind of doubt is left that the influence is character-forming. There is an unspoken, but none the less a real, contempt for the mere frivol of the hour and an appreciation of the beautiful in life. The whole movement is paralleled by that of the new pedagogy in Germany—a reaction against Herbartianism; and there seems to be reason in supposing that every great movement in education and in politics carries its successor in its sleeve. As in Aricia the priest was doomed to be slain by his unknown successor, so possibly our cut-and-dried methods may be waiting for the death-blow dealt by a freer and more child-loving hand. If so, we ought to welcome Ambleside or German reform, and push on the same methods which are in many places followed by those who never heard of the new pedagogy or the Parents' Union; methods which will go on to perfection, to crystallisation—and to death.

First Science Book. By L. D. Higgins. 237 pp. (Ginn.) 2s. 6d.—This volume resembles very closely the same author's "Lessons in Physics" (reviewed in THE SCHOOL WORLD, Vol. VI., p. 119); the chief difference is in the concentration of the chapters on physics and the extension of those on chemistry. We note that several very erroneous definitions in the earlier volume do not reappear in the later one. We are not yet convinced that forty pages of fairly large type are sufficient to give an adequate treatment of the whole range of magnetism and electricity, including both the simplest facts and explanations of transformers, motors, the telephone, &c. Other sections of the book are open to the same criticism.

GEOMETRICAL AND PROJECTIVE SKETCHING.[1]

A SUGGESTION TO IMPROVE THE TEACHING OF GEOMETRICAL AND MECHANICAL DRAWING.

By C. B. MCELWEE,
Instructor in Geometrical and Freehand Drawing, Royal Indian Engineering College, Coopers Hill.

IN the graphic representations of the forms of objects having three dimensions, the methods employed are wholly methods of projection, and the projections or drawings usually made are termed "orthographic" projections or plan and elevation drawings to distinguish them from "perspective" projections or pictorial drawings.

The execution and comprehension of orthographic projections or plan and elevation drawings present many difficulties to the pupil and often to those who use them professionally, and this is true whether the drawings represent problems and theorems in solid geometry, elements and essentials relating to many branches of science, or objects and constructions used in the arts. Indeed, it is not too much to say that the progress of a pupil in these departments of modern education is very often stunted, and in some cases even impaired, through no other cause than the inability to make and understand the projected drawings which are necessarily involved in their study.

The chief difficulties which arise in connection with orthographically projected drawings may be attributed, first, to the fact that the drawings do not represent the form of an object as it would appear when visible to the eye; secondly, to want of sufficient practice in drawing to enable the drawings to be produced with even tolerable accuracy; and thirdly, to an incomplete knowledge of the constructions used in practical plane geometry.

The first difficulty can be overcome by making a study of pictorial drawings or drawings representing objects as they appear to the eye, and by making drawings of this class in conjunction and simultaneously with the study of orthographically projected drawings, thereby causing the mind to become accustomed to recognise in the projected drawings the "appearance" or the "essential identity" of the object so represented.

As to the second difficulty, if drawings representing the appearance of an object are made by the unaided hand only, and not with the aid of mathematical instruments, sufficient practice in drawing will be gained to enable the pupil to execute tolerably accurate projected drawings. Of course it will be understood that, according to the present practice, projected drawings are executed with the aid of such instruments, indeed, modern practice places exclusive reliance for accuracy in them. This accuracy may be conceded as attainable, if the instruments are properly used; but apart from the fact that they are frequently not properly used, I urge strongly that their constant use is unnecessary, and, indeed, harmful to the pupil.

To turn to the first of these difficulties, it must be apparent to all who have had any experience in teaching orthographic projection, either in its principles or in its many applications in science and in the arts, that a pictorial illustration is a very necessary auxiliary to enable the pupil to "conceive" or "mentally realise" in an orthographically projected drawing the "appearance" or the "essential identity" of the form of an object possess-

[1] Abridged from a paper read at a meeting of the Royal Drawing Society. The original paper is entered at Stationers' Hall.

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ing three dimensions, and thus to understand the locations and relations to each other of its parts. It is, however, to be regretted that, excluding perspective, the illustrations usually placed in the hands of the pupil do not represent objects as they actually appear to the eye, and the constructions used, if any, in the production of these illustrations are not based on any sound or scientific principles of "perspective" projection or pictorial drawing. Such illustrations may be termed "pseudo-pictorial drawings," and they are usually, if not always, confined to "isometric" or "oblique" projections, the methods and initial principles of which the pupil intuitively does not understand.

Isometric, or, I would prefer to say, "monometric" projections, as well as "dimetric" and "trimetric" projections, are the "orthographic" projections of forms possessing three rectangular axes, when these axes are situated in particular positions with regard to the plane of projection. In the same sense the orthographic projections of forms of any kind situated in any possible position with regard to the plane of projection might reasonably be called "multimetric" projections, and with regard to such projections I maintain that, as a rule, the pupil does not understand the method of their production. Oblique projections are produced by projecting obliquely to a plane of projection. The conception of this kind of projection presents many more difficulties to the pupil than orthographic projection, and the only logical definition, from a pictorial point of view, which could be applied to it is as follows: "If the rays of the sun be projected obliquely to a plane, the *shadow* of an object 'in skeleton' on that plane is its *picture*."

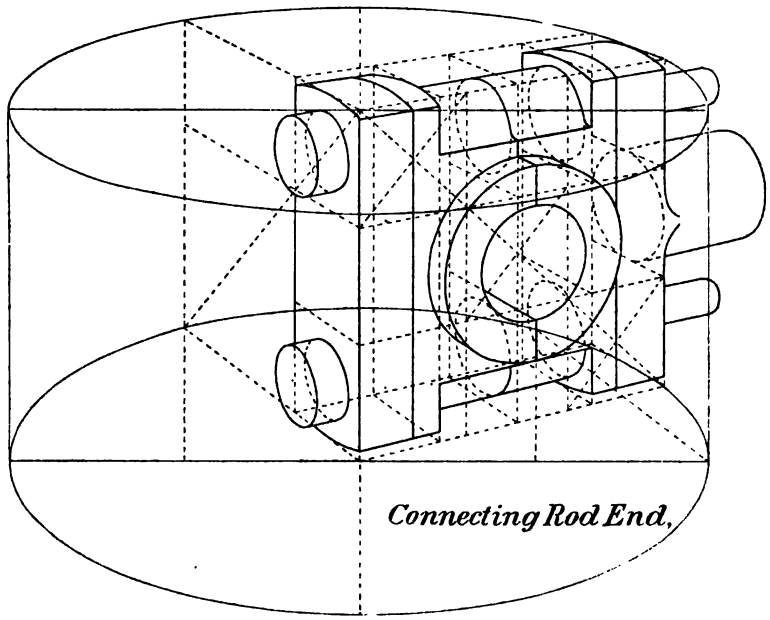

FIG. 1.

Are the introduction and use of isometric and oblique projections as methods of pictorial expression educational? Artistically they may tend to warp and stultify any development of the power of observation and pictorial expression to be found in the pupil, and scientifically they may instil principles which to some appear to violate the mathematical laws involved in the construction of a true perspective projection.

Looking at this matter from a philosophical point of view, if pupils are to be educated to conceive or realise mentally in an orthographically projected drawing the appearance or the essential identity of a form of three dimensions, and the locations and relations to each other of its parts, they must be given an illustration of the true and natural appearance of the object or its parts, so that when the real object is viewed in nature, *i.e.* in perspective, there may be no doubt in the mind of the pupil regarding the true form of the object, and at the same time no doubt as to the essential difference between its perspective representation and the "scale" drawings which give the orthographic projections of it.

There are very many methods of producing a perspective drawing. Amongst them may be mentioned the method of *direct projection*, the *mixed* or architect's method, and, most perfect of all, the method of *direct perspective*. But the constructions used by the expert draughtsman in these methods are such that the ordinary pupil cannot be expected to understand them thoroughly and use them to advantage until he is equipped with a fairly complete knowledge of the properties of "the three dimensions," or in other words of solid geometry, and of orthographic projection and observation drawing.

Therefore, if the beginner is to be put in possession of a method of perspective which he can readily understand and use in producing a perspective drawing, that method must be as simple and as concise as possible, especially if a perspective drawing is to be produced in conjunction with an orthographically projected drawing with the view of gaining a material realisation of a form or object represented in the projected drawing.

It is not generally known, if at all, that the angles between the *orthographic* projections of the radii of a circle on the plane of its orthographically projected ellipse are practically, though not exactly, equal to the *perspective* projections of the angles between similarly situated radii of the original circle which the ellipse represents in perspective. The slight difference which exists between the respective values of these angles varies according to the position of the original angles to be projected, or according to their magnitude. When determined by mathematical calculation it never exceeds, on an average, three to six minutes of a degree in any angle. For practical purposes this difference may be regarded as infinitesimal, and in drawing or sketching the two sets of angles may be considered to be equal.

In view of this fact it is possible to determine by very simple constructions the perspective value of an angle in a drawing or sketch, and in conjunction with the method of measurement of lines known in perspective as "the diagonal method of measurement" it is possible to draw the perspective representation of any form possessing three dimensions.

It would be difficult in an article of this short extent to describe in full the details of the many very simple and

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easily assimilated constructions which can be devised out of these two principles. I must therefore be content to say that I have found it possible to frame a complete system or method of perspective which can be placed in the hands of a pupil not yet familiar with projected drawings of any kind. It is such that the principles involved can be learned by direct observation from simple models, and as knowledge increases these principles can be applied in producing a perspective drawing in conjunction with a plan and elevation or projected drawing. Further, when the pupil reaches the stage at which he may begin the study of theoretical perspective projection he will find that this method, and the principles on which it is based, are still applicable.

One great feature of the method is that mathematical instruments can be dispensed with, and all constructions can be executed by the unaided hand only. Another feature is that perspective "vanishing points" are not required. All constructions used in the production of a perspective representation are based on the simplest geometrical concepts, and are practically confined within the limits of the perspective representation to be drawn. As a result, the mind is trained to recognise the true apparent form of an object (viz. that form alone in which such object can appear to the human perception), and as a further result the hand is trained to follow the mind in producing a representation of such form. From an educational point of view both these results are most important.

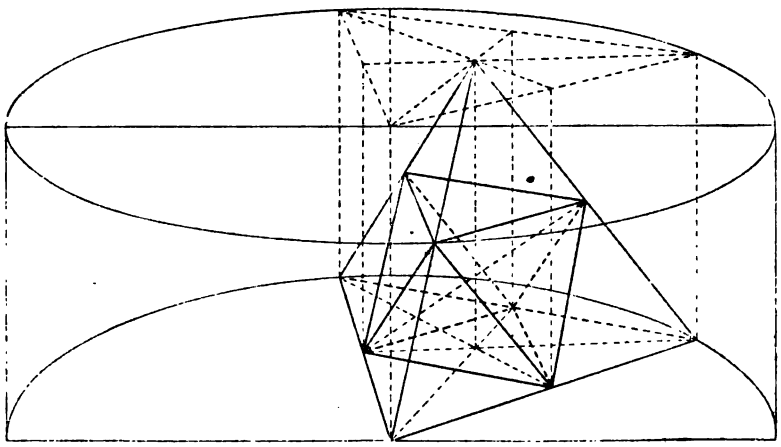

FIG. 2.

I append two illustrations of drawings which have been produced in "class work" in order that any doubts regarding the possibilities of such a method may be dispelled. The first (Fig. 1) is that of a simple mechanical detail, and in it the drawing is produced in conjunction with the orthographically projected drawings of the same detail. The value of a perspective drawing of this nature cannot be overestimated. One constantly finds in reports pertaining to mechanical drawing examinations complaints regarding untidy and unskilful drawing and inability to apply geometrical principles or recognise "one object" in "two or more orthographically projected views."

The ability to make a perspective drawing of the nature here shown should leave no doubt on these questions. In its production, skill in drawing and ability to read and understand orthographically projected drawings are very prominent features, both of which are not always attained in a training devoted to mechanical drafting with mathematical instruments only.

The second illustration (Fig. 2) is that of a tetrahedron and inscribed octahedron. This illustration shows the application of the method of perspective in illustrating problems in both theoretical and practical solid geometry. Additions could be made to this particular example to illustrate a cube and the two inscribed tetrahedrons, showing the part common to both tetrahedrons to be an octahedron. A drawing of this nature should help to make clear many points which, as a rule, do not appeal to the average pupil.

I might add that my system of perspective lends itself to the illustration and solution of problems relating to the intersection of solids or "interpenetration," a branch of projected drawing essentially necessary in mechanical or engineering work, but which is very rarely realised or understood.

In conclusion, I might point out that this method of perspective or "geometrical and projective sketching" is not intended to supersede or supplant any other method of teaching drawing. Indeed, I must impress on my readers that a certain amount of skill in observation drawing is necessary before the pupil can derive any real benefit by its use. The method of drawing should be treated wholly from a mathematical point of view, and on no account should it be presented to a pupil before reaching that stage in which it may be found useful and helpful in educating him to see accurately, represent and read, or think of, the form of objects possessing three dimensions, or of the locations and relations to each other of its parts.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

SET SUBJECTS FOR JULY AND DECEMBER, 1907.

RELIGIOUS KNOWLEDGE:—*Preliminary.*—(*a*) St. Matthew i.–xiv.; or (for Jewish Students only) I. Kings ix.–end.

(*b*) Exodus i.–xx.

Juniors.—(*a*) Genesis xii.–xxiv., xxvii.–xxxv., xxxvii., xxxix.–end; Exodus i.–xx.

(*b*) St. Matthew; or (for Jewish Students only) I. Kings.

(*c*) The Acts of the Apostles i.–xv.

Seniors.—(*a*), (*b*), as Juniors, (*c*) Acts i.–xv., (*d*) Galatians.

ENGLISH LANGUAGE AND LITERATURE:—*Preliminary.*—(*c*) Defoe, "Robinson Crusoe," Part I. (from Robinson Crusoe's first landing on the island to his departure from it); or (*d*) Macaulay, "Horatius," "Lake Regillus," and "The Armada."

Juniors.—(*b*) Shakespeare, "As You Like It."

(*c*) Scott, "The Talisman."

(*d*) A paper of questions of a general, not a detailed, character, on Goldsmith, "The Traveller" and "The Deserted Village," and Southey, "Life of Nelson."

Seniors.—(*b*) Shakespeare, "As You Like It."

(*c*) Milton, "Paradise Lost," i., ii., 1–628.

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(*d*) A paper of questions of a general, not a detailed, character, on Shakespeare, "King Lear," Scott, "The Talisman," Gray, "Poems."

HISTORY, GEOGRAPHY, &c. :—*Preliminary.*—History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1485, (*b*) 1485 to 1603, (*c*) 1603 to 1714 respectively.

Geography. Great Britain; and general Geography.

Juniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1509, (*b*) 1509 to 1688, (*c*) 1688 to 1832 respectively;

or (*b*) Outlines of the History of the British Empire from A.D. 1763 to A.D. 1878;

or (*c*) Outlines of Roman History from B.C. 133 to B.C. 44.

(*d*) Geography. The United Kingdom of Great Britain and Ireland, and America, south of Mexico.

Seniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 55 B.C. to 1509 A.D., (*b*) 1509 to 1714, (*c*) 1714 to 1867 respectively;

or (*b*) History of the British Empire as Juniors;

or (*c*) Greek History, B.C. 359 to B.C. 323.

(*d*) Geography. The paper will consist of four Sections on (*a*) Great Britain and Ireland, (*b*) Europe, (*c*) America, south of Mexico, (*d*) Australasia, respectively.

LATIN :—*Preliminary.*—G. M. Edwards, "Horatius and other Stories" (University Press).

Juniors.—(*a*) Caesar, "de Bello Gallico," VII., 1–33; (*b*) Caesar, "de Bello Gallico," VII., 34–67; (*c*) Virgil, "Aeneid," IX., 1–449; (*d*) Virgil, "Aeneid," IX., 367–818.

Any two of these four to be taken.

Seniors.—Caesar, "de Bello Civili," I.; or Cicero, "de Senectute." Virgil, "Aeneid," IX.; or Horace, "Epistles," I.

GREEK :—*Preliminary.*—Marchant, "First Greek Reader" (Bell), pp. 1–27.

Juniors.—(*a*) Xenophon, "Anabasis," VI., 1–3; (*b*) Xenophon, "Anabasis," VI., 4–6; (*c*) Euripides, "Iphigenia in Aulis," 1–750 (omitting 1–48, 164–302, 543–606); (*d*) Euripides, "Iphigenia in Aulis," 801–1474 (omitting 1036–1097, 1279–1335).

Any two of these four to be taken.

Seniors.—Herodotus, V., 28–91; or Demosthenes, "Philippics," i., ii. Homer, "Iliad," XXIII.; or Euripides, "Iphigenia in Aulis."

FRENCH :—*Juniors.*—Malot, "Remi en Angleterre."

Seniors.—Corneille, "Le Cid"; De Vigny, "La Canne de Jonc."

GERMAN :—*Juniors.*—Hauff, "Der Scheik von Alessandria und seine Sklaven."

Seniors.—Schiller, "Wilhelm Tell"; Sybel, "Prinz Eugen von Savoyen."

MUSIC :—*Seniors.*—Parry's "Studies of Great Composers," Chapters 5–7.

The Ideal Junior Poetry Book. 62 pp. (Relfe.) 6*d.*—This is a good selection of verse for reading and repetition, though whether it is "ideal" depends somewhat upon other conditions than a publisher's announcement. It is certainly praiseworthy, and is likely both to be useful and popular, and nobody can grumble at the price. It is perhaps noteworthy that James Montgomery is selected for the poet who opens the volume; and in the notes he is described as characterised by "deep feeling, generous and enlightened morality, and picturesque language." Shade of Macaulay!

HISTORY AND CURRENT EVENTS.

IT has been found impossible to give definitions satisfactory enough for scientific purposes for those two words —so important in the history of Europe—Church and State. The two institutions have had so many objects, so many methods, in common, that the relations between them, whether in the world of practical politics or in that of speculative science, have proved the Sphinx-riddle of politicians in all ages. The occasion for these reflections comes to us from the United States of America, whence we learn that the Government of that country has commissioned Dr. Eastman, himself a Sioux, to re-name the individuals of that nation in order that they may "realise that their ultimate destiny is citizenship and absorption by the American people." We are reminded of re-namings of olden times. Abram became Abraham, Jacob became Israel, to express a new idea in race and religion. The enthusiasts for classical learning in the fifteenth and sixteenth centuries translated their names into Greek or Latin. Desiderius, Erasmus, *e.g.*, are Latin and Greek equivalents for Gerhard. Melanchthon translates Schwarzerde. So, too, when one is admitted into the Greek or Latin branches of Christendom a "new name" is given. Dr. Ramsay tells us much of this "new name" in connection with Asiatic Worship in the first century of our era. The United States of America are learning a lesson from these old enthusiasms which can develop new Churches or States.

THE death of Mr. Michael Davitt has directed attention to his life-career of hatred to the British Empire and all its works. To the great majority of us this attitude is hard to understand, largely because it is given to very few of us "to see ourselves as others see us." But reminders like these are wholesome, like the parade of a corpse at an Egyptian feast. The hatred of race for race, sometimes embodied specially in the hatred of an individual of one race for the whole of another, is not unknown in history. The Pharaoh of the Exodus intended the destruction of the Israelites. Darius swore to destroy the Athenians. Everyone knows the story of young Hannibal, sworn by his father at his country's altar to destroy Rome, and of the counter-policy embodied in the words "Delenda est Carthago." As Hannibal against Rome, so Philip II. of Spain was dedicated by *his* father to fight for Rome, and it is singular that both these life-careers were failures. Maria Theresia's lifelong struggle to be avenged of her loss of Silesia is another illustration of the same passion. But the greatest perhaps of all in modern times is the great Napoleon's titanic efforts to destroy the "nation of shopkeepers." "I hate you, I hate you, is all that I can say."

THE Russian Duma has already come sharply into collision with the Tsar and his Ministers, and, at the date of writing, there is apparently a direct conflict of policies on the land question, the most important of questions, economic or political, in that country. Thus our questions of last May are beginning to get an answer, and we are waiting to see how the conflict will develop. In England in the seventeenth century it was a question of religion at the bottom and the control of the militia on the surface that led to the outbreak of civil war. It was the question of ecclesiastical lands at the bottom and the crown of Bohemia on the surface that led to the Thirty Years' War in Germany. . . . We note also that there are signs in the Duma of diversity of race interests, and some are wanting "decentralisation," but disclaim all ideas of "federation"

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or "dismemberment." Surely Russia, like Austria-Hungary, is too big, too diversified, to succeed with only one Parliament. It is as much as ever we can manage with Ireland, and the United States of America have to work hard in their schools to Americanise their varied European immigrants. The French Revolution had to fight to get its republic "one and indivisible."

THE discussion in the House of Commons in the middle of last May on the second reading of the Plural Voting Bill was an interesting illustration of the nature of our British constitution. It is a growth, not a ready-made article. It was not founded, like the constitutions of all other European countries, on ideal principles which the peoples wished to have carried out into practice. Coming into existence in the Middle Ages so gradually and unconsciously that evidence is all but lacking for the determination of many of the most important of its stages, it is still possible to dispute as to the nature of the House of Commons, even after the Reform and Redistribution Acts of the last century. Whom or what do the members of that House represent? Do they represent individuals? or localities? or classes? In the beginning, they were the meeting of estates, groups of the community important enough to be consulted. Now, in all cases but the universities, the groups are crushed together in localities. Yet the change was made slowly, and without philosophical thought. And thus we still do not "know ourselves."

ITEMS OF INTEREST.

GENERAL.

THE Board of Education regulations for secondary schools for the year from August 1st next to July 31st, 1907, have now been published. In a prefatory memorandum Mr. Morant says that it has been thought desirable to defer making alterations of substance in the regulations until the initiation of the other changes necessitated in connection with the increase of Exchequer grants in aid of secondary schools which has been promised, and is provided for in the Estimates for this year. Important matters of principle, it is explained, inevitably arise as regards the allocation of the increased grants and the eligibility or ineligibility of various types of secondary schools for State aid, which require careful investigation, and may involve discussion in Parliament. For this reason the modified or supplementary regulations on which the new grants will depend will not be issued until a later date.

THE only substantial change in the conditions of recognition for grants laid down in previous regulations concerns the adequacy of teaching power in the schools. As regards size of classes, the rule has been formally laid down that the number of scholars in a class should be limited to thirty, and must in no case exceed thirty-five. Respecting the sufficiency of the staff in qualification, notice is given that after July 31st, 1907, the Board may require that a certain proportion of the staff shall have gone through a course of training recognised by the Board for the purpose. The kind of training to be required, and the institutions in which it should be received, are, the memorandum goes on to say, matters on which the Board is not yet in a position to lay down any definite rules. Sanction may, however, be granted for the recognition of persons whose names have been entered on Column B of the Teachers' Register.

A NEW chapter has been added to the regulations laying down rules under which any secondary school may be recognised on application as an efficient secondary school. A school providing the kind of education, and reaching the standard of efficiency, required in the case of schools recognised for grants may, if the school authorities so desire, obtain this recognition, although on other grounds it is not qualified, or does not wish to apply, for grants from the Board. Recognition will only be given on the result of a full inspection, which will be held if the Board is satisfied from the preliminary information obtained that there is a *prima facie* case for recognition, and will be without charge to the school. The Board proposes to publish periodically lists of recognised schools in order to assist local authorities in their survey of the existing provision for higher education and in framing schemes for aiding, co-ordinating, and supplementing it. The memorandum concludes with an abbreviated summary of the introduction to the regulations of last year.

THE recent lamentable accident at the Preparatory School, Dulwich, has brought forcibly to our minds the fact that miniature rifles are capable of inflicting fatal injuries, and it is important for every schoolmaster to see that proper regulations for safety are strictly enforced on his school range. These regulations are comparatively simple, but it is important that they should be well known. It must be set down as an axiom that any gun with a cartridge in it is liable to be discharged, and such a gun should be pointed, and kept pointed, at the target, and at the target only, until the cartridge is extracted. All the rules for the conduct of safe shooting may be summed up in the words: "Open the breech." "When your gun is fired—open the breech." "When you take it from the shoulder without firing—open the breech." "After a mis-fire—open the breech," and, above all, do so while the gun is still pointing at the butt.

THERE lie before us three newspaper accounts of the inquest on the Dulwich tragedy; they give no assistance to the schoolmaster inquiring how similar accidents may be avoided, and they are probably all inaccurate. No. 1 states that the cartridge exploded "*in the magazine*," implying that a magazine rifle was used; this we believe was not the case; magazine weapons should never be used on school ranges. The writer probably means "in the chamber." No. 2 states that the boys were sitting on a form "behind the target"; this is manifestly absurd; the writer probably means "behind the firing-point." In No. 3 the coroner is stated to have said that a loaded rifle should be pointed in the air or to the ground. With this we do not agree at all; a shot-gun may be pointed in the air, where the charge may scatter, *but not a rifle*. A loaded rifle may be pointed carefully into soft ground, but in a school playground, which is always hard, and possibly paved, there is danger from a ricochet or a splash (was this accident due to a ricochet? The inquest gives no clue). There is only one safe place to which a loaded rifle may be pointed, and that is the place to which it is meant to be pointed, viz. the butt, and the rifle must be kept pointed at the butt from the insertion of the cartridge until its extraction. It should be considered as an act of deliberate disobedience to insert a cartridge or to touch any part of the mechanism while the rifle is pointing elsewhere than to the butt. If these precautions are observed, and the most scrupulous care and respect for the rifle inculcated, parents need be under no anxiety about their boys learning to shoot.

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Many miniature rifles are little better than toys, and some of foreign make are not of the best material; a worn striker or a softened spring may produce a mis-fire. We ourselves have known a case in which the cartridge failed to fire and the extractor failed to act; in this case the only thing to do was to insert a cleaning rod from the muzzle to knock out the cartridge, *still keeping the rifle pointed at the butt.* It is hoped, now that more miniature rifles of English manufacture are being made, that such faults will not recur. Beginners with the rifle have a tendency in loading to pull the rifle over towards the left; this should be watched and corrected.

Thanks to the generous distribution of copies of the valuable report of his Educational Commission to the United States, Mr. Alfred Mosely's name is known to teachers and other educationists everywhere. Many teachers will gladly avail themselves of the opportunity to visit the schools of the United States and of Canada which the latest public-spirited scheme arranged by Mr. Mosely offers them. The object of the scheme is to allow to members of the teaching profession in Great Britain facilities for seeing and studying on the spot the American and Canadian educational systems, at a nominal cost, independently or in small groups. Owing to the generosity of the steamship companies, between the months of November and March next some five hundred teachers will be conveyed across the Atlantic to the United States or Canada and back for a return fare of £5 each.

The steamship companies will grant these facilities during the months of November to March next inclusive. Each steamer sailing from Liverpool and Southampton will take a certain limited number. Teachers desiring to visit Canada will proceed there direct by the Canadian Pacific Line. President N. Murray Butler, head of Columbia University, New York, will, in conjunction with Superintendent Maxwell (of the Board of Education, New York), prepare itineraries for the visitors in advance, and give them all particulars of what to see and how to set about it. They have also arranged that committees shall meet the travellers on arrival and conduct them to quarters of moderate cost previously secured. It is earnestly to be hoped that local authorities and others controlling education will grant teachers leave of absence and pay their salaries during the time they are away from school, so that the fullest advantage may be taken of this unique opportunity offered to teachers to compare for themselves American or Canadian educational methods with those in operation here, at a minimum of cost. Local authorities and applicants for passages should apply in the first instance to Mr. Alfred Mosely, Union Bank Buildings, Ely Place, London, E.C.

In reply to Sir William Anson, who asked, in a question placed on the Order Paper of the House of Commons, whether the Board of Education has come to any decision as to the extension of the certificated teacher's undertaking of service to service in schools other than elementary, and, if the decision is in favour of such extension, when it will be announced, Mr. Birrell said the Board has come to the conclusion that it is desirable to allow such declaration of service to be fulfilled by service in any State-aided or rate-aided school, including therein schools other than elementary. The insertion of a provision in the Board's regulations for training colleges to carry out that intention is, however, unavoidably delayed pending the solution of the difficulties which surround the question of any scheme for securing from the teacher a guaranteed period of teaching service, as proposed by the Consultative Committee. While, therefore, the view of the Board on the point referred to in the question may be said to be announced, it must not be understood that all of the points consequential to it, and essential to carrying it out, are yet completely settled.

An announcement has been made that if the Board of Education is satisfied that the expenditure of a local education authority under Part 3 of the Education Act, 1902, during the year ended March 31st last, was such that the expenditure met, or to be met, by rates exceeded the produce of a rate of eighteenpence in the pound, the Board may make, in addition to any other grants, a special grant equal to three-fourths of the excess. This regulation applies to England and Wales.

An agreement for the mutual recognition of certificates has been arrived at between the Universities of Manchester, Liverpool, Leeds, and Sheffield Joint Matriculation Board and the Universities of Oxford and Cambridge. This Joint Matriculation Board will grant exemption from its matriculation examination to persons who have passed Responsions at Oxford with one additional subject, or have passed parts i. and ii. of the Previous Examination at Cambridge with one of the additional subjects. Under certain conditions as to subjects taken, exemption will also be granted to holders of certificates of the Oxford and Cambridge Senior Local examinations.

A general meeting of the National Association for the Promotion of Technical and Secondary Education was held on June 15th, when the Duke of Devonshire presided. In the report, subsequently adopted by the meeting, the executive committee refers to the Education Bill, one clause of which, the report states, threatens serious danger to the interests of secondary and technical education. This clause is the one which will enable the council of a borough, other than a metropolitan borough, with a population of 50,000 or upwards, and the council of an urban district, subject to the same population limit, to apply to the Board of Education to be put in the position of a local education authority for higher education, and provides that the Board of Education may make an order accordingly after holding a public inquiry. "It is very questionable," the committee states, "whether a borough or urban district of the size contemplated can make provision to meet all the educational requirements of the area. It is only by the co-operation of a large community that adequate facilities for higher technical education can be provided. . . . The total isolation of the larger non-county boroughs and urban districts is not only bad for themselves, but deprives the adjoining districts of the power to acquire the facilities which they need."

In presenting the report, the Duke of Devonshire said that the society has been embarrassed greatly in recent years by the contraction of its resources. This financial difficulty has been met by the raising of a special fund and by grants by the Royal Commissioners for the Exhibition of 1851. These two sources of income cannot be relied on permanently, and if the operations of the association are to be continued it is absolutely necessary that a sum of from £300 to £400 per annum shall be raised in addition to its present income. When the association was formed nearly twenty years ago it was the only agency for the promotion and organisation of technical instruction in the country. Largely owing, however, to the exertions of the association itself the position has been completely changed. Parliament, the Government, the local authorities have now

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taken up this question, and thus the original object of the association has to a great extent been accomplished. The association is no longer necessary to stimulate interest in technical education or to promote legislation. It has, however, become a centre to which local authorities engaged in this work are accustomed to look for advice and information. The quarterly *Record* of the association has also been greatly appreciated by local authorities, and the cessation of its publication would be keenly felt. Much of the work is evidently such as might be performed, though in a somewhat different manner, by a Government department. The Duke of Devonshire suggested that the executive committee should ascertain how far the Board of Education would go in the direction of assuming the functions which the association has hitherto discharged. If it should be found that those functions can be more usefully performed by a private association than by a Government department the committee should consider how to secure a larger amount of assistance from the public.

AN extraordinary general meeting of the Incorporated Association of Assistant-Mistresses in Public Secondary Schools was held on May 26th at King Edward's High School for Girls, Birmingham. A memorial to the President of the Board of Education disapproving the abolition of the Teachers' Register was approved. The memorial enumerated the benefits which, in the opinion of the association, have resulted from the Register, and expressed the earnest desire that the possibilities of usefulness inherent in the registration movement should receive due recognition, and, in lieu of the step of abandoning the Register, means might be taken to reconstruct it and to promote its development on lines acceptable to the profession as a whole and consistent with permanent efficiency. Some discussion also took place on the question of Woman's Suffrage. Papers were read by Miss Laurie on the importance of plant geography in the teaching of botany, and by Miss Vernon Harcourt on a visit to some schools in Germany and France.

THE Council of the Association of Teachers in Technical Institutes has adopted a series of resolutions respecting the proposed technological high school at South Kensington. The Council is of opinion that the work of the new institution should be confined to technical research and post-graduate work generally. The conditions of admission, another resolution maintains, should be framed so that the minimum age of students entering the college should be nineteen years, and all should be required to give evidence of three years' previous satisfactory training after having reached the standard of general education represented by university matriculation. There should be, the Council further thinks, a greater element of public control on the governing body than is suggested in the recent Departmental Committee's report, and the institution should be permanently independent of university control.

THE Russian Minister for Education will, it is understood, present to the Duma shortly a Bill to provide for universal elementary education, asking for £11,200,000 to establish the new system.

MR. H. SIDNEY JONES, senior mathematical master at University College School, London, has been appointed headmaster of Cheltenham Grammar School.

THE Rev. E. C. Sherwood, senior science master at Westminster School, has been appointed headmaster of the South-Eastern College, Ramsgate.

THE result of the Second Division examination, held in March, 1906, shows that 70 of 1,021 candidates have obtained appointments, or about one in fourteen. Service marks obtained places for sixteen boy clerks who would not otherwise have been successful; by the aid of service marks, the same proportion of boy clerks as of outside candidates obtained appointments. The Commissioners announce that an examination will be held, commencing on October 1st, for not fewer than eighty appointments in the Second Division. The subjects of examination were published in THE SCHOOL WORLD, Vol. VIII., p. 71, together with the syllabus in mathematics; the geography scheme will be found on p. 32 of the same volume. The Commissioners announce also that after this year the age limits for these examinations are to be taken on March 1st for an examination held in the first six months of the year, and on September 1st for an examination held in the second half of the year.

SCOTTISH.

THE new regulations for the training of teachers, after a long period of incubation, have at last assumed final form, and have been laid as a Minute on the table of the Houses of Parliament. It is satisfactory to find that the new provisions, which deal with the qualifications of secondary-school teachers, are framed to suit actual conditions, whereas the original seemed drafted for an ideal, and, we fear, far distant, future. The candidate on probation stage, which was strongly opposed in these columns, has disappeared, and is replaced, as suggested, by a liberal bursary scheme to give secondary education to all capable pupils, whether candidates for the teaching profession or not. The regulations cannot come into effect until four weeks after their presentation to Parliament, and in the interval are subject to review by either House; but it is not expected that any modifications will be made in them.

THE education question has bulked largely in the debates of the May Assemblies. The two topics round which discussion has centred were the new regulations for the training of teachers and the transference of the church training colleges to the new provincial committees. In regard to the former there was a good deal of divergence of opinion, but on the whole the attitude was friendly. In regard to the transference of the training colleges, it was stated that negotiations were going on satisfactorily, though there exists a marked difference of opinion on the question of the responsibility for the religious instruction of the students. The representatives of the provincial committees, apparently at the instigation of the Education Department, thought that this work should not be undertaken by them, but continued by the church as hitherto, and they would grant all reasonable facilities for carrying it on. The church representatives, on the other hand, wished the new committees to be responsible for the work. They hold that the Scottish system of education is a combined system of religious and secular education which are interwoven one with another, and to separate them in the way desired by the provincial sub-committees would set up a line of demarcation that has never previously existed. No settlement has yet been arrived at, but it will be intolerable if, through any over-zeal for logical consistency on the part of the provincial committees, a "religious difficulty" is created when none has previously been known. If the committees are to take over the training colleges, they ought also to take over with them all the duties at present belonging to them.

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The *Glasgow Herald*, in a leader discussing the report on education in Scotland, takes up towards the teaching profession an attitude that is, fortunately, becoming characteristic of the Press in all large centres. The following extracts represent the spirit of the whole article:—"If the labour of the teacher who comes earlier than anyone else outside of the family in contact with a young mind is to be regarded as not of the least but of the first importance, then the hire which will be worthy of the teacher will have to be, not greatly, but vastly, increased. It is probably beyond all question that owing to the superior inducements of other and more remunerative professions, that of the teacher is no longer recruited by such talent as it was formerly able to command. Unless the old quality can again be secured, the prospects for teachers and—what is more important—for pupils is by no means good." The article goes on to commend to the educational authorities in this country the principles laid down by the Prussian Government in instituting their system of national education. "In order to secure good teachers for the schools, it is necessary that, before everything else, care be taken that they have a proper maintenance"; and so "in every Act regulating German schools, as in all Acts up to 1872 regulating Scotch schools, pensions at a fixed rate are secured for all teachers who have to retire at a fixed age."

Prof. G. G. Ramsay, who has occupied the Humanity Chair in Glasgow University for the past forty-five years, has intimated his resignation to the University Court. Prof. Ramsay during all that time has been an outstanding figure in the University. As students usually came to his class in their first year, the responsibility rested on him of licking into shape these untutored cubs of learning, and this duty he discharged with a very evident relish to himself, if not always to the students, and with an effectiveness that smoothed the path of his less robust colleagues. For this reason Prof. Ramsay was held in awe by all new comers, but was regarded by his second-year students and all others with affection and admiration. He did much to maintain the traditional connection between town and gown, and took his full share in the civic life of the community. His interest in education extended far beyond the limits of his university chair. He took a prominent part in the management of Allan Glen's and Hutchison Grammar School, and on several occasions has opposed strongly and successfully the policy of the Education Department. The Classical Association was his pet scheme of recent years, and its success is chiefly due to the personal enthusiasm and energy of Prof. Ramsay, who is its perpetual president.

An appeal has been made to the Chancellor of the Exchequer by the Scottish Liberal M.P.'s on behalf of the necessitous schools in Scotland. A grant of £135,000 has recently been allocated to such schools in England, but not one penny has been given to Scotland, although it has no fewer than sixty-five school districts with a school rate of 1s. 6d. and over. The Scottish members in their memorial hint that this is their reward for not being obstreperous. "They have not agitated noisily, have not refused to pay rates, and have been neither active nor passive resisters. There has been no strike of teachers. All they have done is to make peaceful representations to their members of Parliament, but these are quite as worthy of being listened to as more noisy protests." The Scottish Liberal M.P.'s must be a simple folk if they think to charm money out of the Treasury Cerberus by even the smoothest of words and the strongest of cases. In these strenuous times the watchword is "agitate," and a threat to oppose the financial clauses of the present Education Bill would prove a much more effective weapon than all the eloquence at their command. The memorial further points out that £100,000 a year has recently been voted to the English university colleges without a single penny coming to Scotland. In addition, the present Education Bill proposes to devote one million pounds for the use of Church schools in England, while Scotland took over the Church schools in 1872 without getting any assistance from the Imperial Treasury. The Liberal M.P.'s threaten to return to these questions later on, but it is safe to say that they will have no success unless they put a little more "steel" into their attitude.

An exhibition to illustrate the various methods of teaching home geography is to be held in the Outlook Tower, Edinburgh, from July 6th to the 14th. The exhibits will be based on the regional geography of the Edinburgh district, and will comprise a collection of local maps and models, simple apparatus for the construction of maps in the field, and for making easy astronomical or meteorological observations. Such an exhibition should be of the greatest value at the present time, when so much interest has been aroused in regard to the methods and principles of geography teaching.

IRISH.

The debate in the House of Commons on May 21st has produced a result unprecedented in Irish secondary education. The Rules and Programme for 1907, which we commented on last month in this column, are no more, and at present it is impossible to say what the outcome will be. By the Act of Parliament, the new Rules and Programme, after being signed by the Lord Lieutenant, must lie on the table of the House of Commons for so many days, and, failing objection within that time, they become valid for the ensuing year. This year the unusual happened. Mr. T. O'Donnell moved an address asking that the Royal assent should be withheld from the new rules until they were amended in two particulars. The new rules propose that a student, to pass the examination as a whole, must pass in one of three languages (other than English), viz. Latin, French, or German. Mr. O'Donnell proposed that Irish should be put on a level with these three. His other proposal was to alter the compulsory subjects for students competing for exhibitions and prizes in the experimental science course, and to add the special courses in domestic economy, and in physiology and hygiene, as alternatives to one of the preliminary courses of experimental science and drawing, or a special course in physics, chemistry or mechanics, or (for girls) botany. Mr. Bryce supported the proposals, and they were accepted by the House without a division. The Intermediate Commissioners have refused to accept them, but the difficulty will apparently be solved by continuing for another year the rules for 1905–6, which Mr. Bryce has since explained will be laid on the table of the House in time to comply with the necessary regulations before it rises on August 4th.

The question arises: Should the House of Commons be encouraged to interfere in purely technical questions of this kind? It no doubt has the right, and Mr. Bryce has lent his support. But we venture to think he treated the Intermediate Board with scant courtesy. He stated that he had no control over the Board, and had no power to suggest what rules it should make. This is hardly accurate.

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In the first place, the Commissioners have all been appointed by the Government, and have been chosen as competent authorities. The Government, therefore, can hardly disown them, and in a matter of this kind a new Government takes over the responsibility from its predecessor. Secondly, and this is more important, the Lord Lieutenant, whose Chief Secretary Mr. Bryce is, has actually signed the Rules and Programme and given them Government sanction. The Government had missed its opportunity for making suggestions, and if the Government has changed its mind it should openly say so, and not disclaim responsibility. On the ground of the inconvenience it would cause, Mr. Bryce should have refused to accept Mr. O'Donnell's motion, and have stated his willingness to put his views before the Board with a view to an alteration of the rules either in this or a subsequent year. On the general question whether Irish should be placed on a level with Latin, French, and German, this is not the place to enter, but it may be added that any student is at liberty to take Irish as an optional subject.

THE Royal Commission to inquire into Trinity College, Dublin, and the University of Dublin, has been appointed. The Commissioners are: Rt. Hon. Sir Edward Fry (chairman), Rt. Hon. Christopher Palles, Sir T. Raleigh, Sir A. W. Rücker, Dr. H. Jackson, Dr. S. H. Butcher, Dr. Douglas Hyde, Prof. D. J. Coffey, and Mr. S. B. Kelleher. The terms of reference are: to inquire into and report upon the present state of Trinity College, Dublin, and of the University of Dublin, including the revenues of the college and of any of its officers, and their application; the method of government of the University and of the college; the system of instruction in the college and the teachers by whom it is conducted; the system of university examinations, and the provision made for post-graduate study and the encouragement of research; and also to inquire and report upon the place which Trinity College, Dublin, and the University of Dublin, now hold as organs of the higher education in Ireland, and the steps proper to be taken to increase their usefulness to the country. The official communication adds that this inquiry will be complementary to the Royal Commission appointed in July, 1901, to consider the condition of higher education available in Ireland outside Trinity College, Dublin. The Commission is a strong one. Two names have caused some surprise, that of Dr. Douglas Hyde, who is the president of the Gaelic League, and that of Mr. Kelleher, who was nominated by Trinity College, and is the only Roman Catholic fellow, having been elected so recently as 1904.

THE proposed abolition of the Teachers' Register has called forth strong protests from Irish secondary-school teachers. The Association of Women Graduates has drawn up a petition which it has asked all registered Irish teachers to sign, to be forwarded to the Chief Secretary. The Teachers' Guild and the Central Association of Irish Schoolmistresses have also forwarded protests to Mr. Bryce and Mr. Birrell. There is no doubt that registration, although not officially acknowledged in Ireland, has indirectly been of good influence, and Irish teachers look forward to its official recognition there at no distant period. They know of no effectual substitute.

ALEXANDRA COLLEGE has been celebrating this June its fortieth anniversary. It may thus claim to be of older standing than any of the women's colleges at Oxford or Cambridge. Its work has been mainly in connection with the Royal University, and has been in many ways affected by the recent opening of Trinity College to women. At the Commemoration on June 1st, when Lady Aberdeen gave away the prizes, the Warden, the Dean of St. Patrick's, appealed for Government assistance, which Mr. Bryce, who afterwards spoke, hoped it might be possible to give. An interesting address was also delivered by Prof. Butcher. In the evening a ladies' dinner was held, and the following afternoon there was a garden-party at the Vice-Regal Lodge.

THE report of the Department of Agriculture and Technical Instruction for 1905 contains some interesting particulars of the development of its work in technical instruction. This comes under two heads: (1) the organisation of a system of instruction in day secondary schools in such subjects as experimental science, drawing, domestic economy, and manual instruction; and (2) the organisation of technical instruction properly so called, under local authorities. The former may be regarded as now well developed. It has been established for four years; it has become an essential part of the curriculum of almost every secondary school in Ireland, and is taking in secondary education the position it was designed to take. With regard to the latter, there is still much to be done. In 1901 there was—outside the county boroughs—scarcely a technical school in Ireland. Now a large number have been established, and there are schools in thirty urban districts. The county schemes and the combined urban and county schemes are also working satisfactorily. The number of students in urban districts has increased from 11,465 in 1901–2 to 17,737 in 1904–5. The greatest need in urban centres at present is suitable and permanent buildings in which to continue and develop the work. The Commission to inquire into the working of the Department has been sitting in Dublin, and the earliest witnesses have been the secretary, Mr. Gill, and the assistant secretary, Mr. Geo. Fletcher.

WELSH.

THE Drafting Committee for the proposed National Council of Education has been held at Llandrindod Wells. The great difficulty, of course, is the question of representation. The suggestion is to have a Council of not less than ninety or more than ninety-five, and that the proportion of representation be fixed and adjusted by the King in Council, under these conditions:—(*a*) That the county councils, the county boroughs, and the urban district councils of Glamorgan and Monmouthshire shall together have a majority of one on the Council; (*b*) that the meetings of the Council shall be peripatetic and held in South, North, and Mid Wales alternately, unless and until otherwise resolved by a majority of at least two-thirds voting on the question; and (*c*) that each Welsh county council, county borough, and urban district council the population of which exceeds 50,000 shall have one representative on the Executive of the Council, with an additional representative for each 100,000 or part thereof after 100,000. This basis secures a majority on the Council for the two larger counties, whilst the smaller counties obtain a majority of one in the constitution of the Executive of twenty-seven members.

FROM the educational point of view, of perhaps more importance is the suggestion of a consultative committtee which shall report to the Council on any matter referred to it, and shall have power to advise the Council on any educational questions. The consultative committee shall consist of such a number of members of the Council as the Council thinks fit, and of (*a*) two persons appointed

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by the University of Wales; (*b*) one person appointed by the University College of Wales, Aberystwyth; (*c*) one person appointed by the University College of North Wales; (*d*) one person appointed by the University College of South Wales and Monmouthshire; (*e*) two head teachers in secondary schools in Wales appointed by the Council; (*f*) two head teachers in public elementary schools in Wales appointed by the Council; (*g*) one person appointed by the Council of the National Museum of Wales; (*h*) one person appointed by the Council of the National Library of Wales; and (*i*) such a number of persons of experience in education and acquainted with the needs of the colleges, schools, and other educational institutions in Wales as the Council may think fit, provided that at least two of such persons shall be women.

IT seems that the question is being raised in Wales as to whether the system of intermediate education cannot be too much "inspected." One headmaster has recently complained of having had, within a short space of time, five inspections, three in three weeks. "The supposition was that they were intended to benefit the school, but he dĭd not think the school benefited one single scrap by them, except by one. The other four were purely a waste of money and a farce." It appears that four of these inspections were by the Board of Education, and one by the Central Welsh Board. One point the teachers would probably like to know about the new National Council for Wales is: Will the inspections be organised, as well as the schools?

IN England we are accustomed to associate youth only as scholars in the Sunday schools. Not so in Wales. Surely Wales is right—for education is conterminous with life. It may seem undignified to continue to go to school when one is grown up, but to continue one's education through life is the only sound view. In North Wales a lady has established the custom of presenting medals to the oldest six Sunday-school scholars. The awards have recently been made, to people whose ages were as follows:—84, 84, 83, 83, 83, 90, 89; and the years of membership of the Sunday school were respectively 81, 81, 80, 80, 81, 85.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Elementary French Accidence with Exercises. By G. H. Clarke and W. G. Griffiths. 108 pp. (Brown.) 1*s.* 3*d.* net.—The greater part of the book is taken up by a succinct statement of the chief facts of the accidence; the rest consists of twenty pages of English sentences to be translated into French, and a vocabulary. There is really nothing fresh about the book. We even seem to have met before this the statement in the preface that "there is no royal road to learning."

Grammaire Française Élémentaire. By W. M. Poole. viii.+126 pp. (Murray.) 2*s.* 6*d.*—This is a careful piece of work, presented in an attractive form. All that is important in the accidence and syntax is gathered into seventy pages of clear type, and is followed by capital exercises on reform lines. The book is intended for younger pupils than the *Grammaire Française* which Mr. Poole wrote some years ago in collaboration with M. Becker.

Intermediate French. By L. C. Jacques. 139 pp. (Ginn.) 2*s.*—This book hails from America, where it would presumably be used by pupils preparing for what is equivalent to our matriculation. It contains French passages, largely of a philosophical and abstract character, English passages based on these, some "exercises for general review," and a good vocabulary. It is to be regretted that the matter is not more varied, and it cannot be said that the book supplies a want.

Nouvelle Grammaire Française. By J. G. Anderson. xii.+188 pp. (Methuen.) 2*s.*—We are getting what the Americans call "an elegant sufficiency" of French grammars written in French for English pupils; but we must at once add that Mr. Anderson's book contains a great deal that is of interest. We are inclined to think that his introduction on French pronunciation, though written in English, is nevertheless too difficult in language, owing to excessive condensation. The beginner will make nothing of it, and to the expert it naturally offers only familiar matter. The treatment of accidence and syntax deserves the careful attention of teachers, as it is often suggestive and sometimes illuminating. The examples are very judiciously chosen, and the teacher will find them most useful.

Elementary French Grammar. By Dr. J. Wright. Third edition, revised by C. T. Onions. vii.+184 pp. (Nutt.) 2*s.*—Mr. Onions has now brought this book into line with his recent revision of Otto's large French conversation grammar. He has rewritten the section dealing with the pronunciation, and in the vocabulary each word is now accompanied by a phonetic transcript in the alphabet of the Association Phonétique Internationale. It would have been well to add also some of the exercises in transcript. As for the Gaspey-Otto-Sauer method, it is too well known as a typical translation method to call for discussion here.

Bell's First French Reader. By R. P. Atherton. viii.+78 pp. (Bell.) 1*s.*—This is a nicely printed selection of forty-eight short pieces in prose and verse, drawn from many authors, and almost as varied in value as the illustrations. There are footnotes, mainly in French, and sections of connected words. It is satisfactory to find that growing attention is being paid to the acquisition of a useful stock of words. We also welcome Mr. Atherton's decision to give no French-English or English-French vocabulary, but we regret that he continues to believe in the value of composition for beginners. The book is a careful piece of work, and deserves commendation.

Materials for French Prose Composition. By E. Otto. Fifth edition, revised by C. T. Onions. vii.+193 pp. (Nutt.) 2*s.* 6*d.*—Mr. Onions has subjected this book to a thorough revision, and thereby increased its value considerably. Reform teachers might utilise some of the stories for free compositions.

P. J. Stahl, Les Aventures de Tom Pouce. Edited by H. H. Horton. 46 pp. (Blackie.) 4*d.*—This amusing version of the Tom Thumb story is suitable for pupils in their second or third year of instruction; but many would have preferred notes in French, or no notes at all. Those provided deal mainly with elementary grammar or give renderings of the text. We note a few misprints: *fées* (p. 9), *des* (p. 11, l. 6), *crayons* (p. 15, l. 23), *le* omitted (p. 19, l. 24), *petit* (p. 31, l. 9), *qui* (p. 31, l. 22).

J. N. Bouilly, L'Abbé de l'Épée. Edited by W. G. Hartog. 90 pp. (Blackie.) 8*d.*—A very sentimental drama

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of a milk-and-water type, which hardly deserves to be read in class. The notes are adequate and generally trustworthy; we are interested to learn that D'Alembert "ascertained the quantity of the terrestrial axis." That was clever of him.

A. de Musset, Croisilles et Poèmes Choisies. Edited by W. G. Hartog. 71 pp. (Rivingtons.) 1s.—A simple little tale and a few well-known poems; brief notes in French; exercises consisting of questions in French on the text, grammar, suggestions for composition; and, we regret to add, passages for re-translation. We have no room for a list of the misprints we noticed; Mr. Hartog will doubtless get more careful in time. We must, however, ask Miss Mary Williams to give us something better than these illustrations, for she has done much better work before this. The picture of Croisilles, with squashed nose and game leg, apparently about to sling the twopenny loaf at the end of his stick into the water, is enough to prevent one from starting the story; but the second picture is perhaps even worse.

Fables Choisies de La Fontaine. Edited by W. G. Hartog. 75 pp. (Rivingtons.) 1s.—Mr. Hartog has selected twenty-four of the best-known fables, and has supplied French explanatory notes and exercises, consisting of questions on the text, to be answered in French, suggestions for written exercises, short passages for translation into French, and a vocabulary. This work is, on the whole, well done. The proof, as we have noticed before in some of Mr. Hartog's books, has not been read with sufficient care. We have noticed misprints on p. 14 (*la charge*), p. 15 (*rongèe*), p. 30 (*croquer*), p. 35 (*curioisité*), p. 50 (*lasserènt*), p. 54 (*française*), p. 72 (*réprondre, ruger*), not to mention faulty punctuation and old-fashioned spellings, which only confuse pupils, such as *oût* (p. 3), *tenoit* (p. 4), *très-fort* (p. 8), *pesans* (p. 11). The vocabulary appears to be complete. There are three good full-page illustrations by Miss Mary Williams. A short account of La Fontaine might well have been added: it seems a pity not to give pupils some idea of the man whose works they are reading.

Outre Manche, Organe de la Guilde Internationale. (6, rue de la Sorbonne, Paris.) Abonnement: France, 8 francs par an; Étranger, 9.50 francs par an; le numéro, 0.75 franc.—We congratulate the *Guilde* on its enterprise in issuing this attractive journal, a symbol of the *entente cordiale* between French and English teachers of languages. It contains interesting articles and reviews, hints for candidates preparing for examinations in English, details of lectures on French literature for foreigners, &c. We trust that *Outre Manche* will have a long and prosperous life.

Classics.

The Aeneid of Virgil, with a Translation. By Charles J. Billson. In two volumes. 310+336 pp. (Arnold.) 30s. net.—The classical student will look on these volumes with delight; they remind one of olden days when authors took a pride in their editions of the immortals. These volumes are beautifully printed on fine paper in large, clear type, and with ample margins. The work is not introduced with a flourish of trumpets, but left to stand on its own merits; and the only introduction of a personal character is the dedication to the translator's daughter, who bears a name familiar to all readers of Virgil. We are reminded of that other father and daughter who collaborated in making what is, perhaps, the best commentary on the Aeneid—Dr. James Henry and Miss Henry. We have no hint as to the texts which Mr. Billson uses; he prints the Latin text opposite the English; but he does so, we imagine, rather as an aid to the reader than as an attempt at independent criticism. The English translation is in blank verse, and is contained in the same number of lines as the original; every point in the original is attempted to be reproduced, even to the incomplete lines. Considering the nature of the English and Latin languages, this implies severe compression, and sometimes the omission of unimportant details. But Mr. Billson's skill is great, and very little indeed is left out. The compression, however, has an effect on the rhythm, which is rather stiff, especially in the rapid passages. The style is severely simple, eschewing all manner of affected characteristics; but, at the same time, it must be admitted it does miss a good deal of Virgil's delicacy. Nevertheless, it can be read with real satisfaction, and is, indeed, a remarkable feat. Mr. Billson is evidently a good scholar, and on that score will satisfy the exacting reader. We may conclude with a specimen taken almost at random, for the workmanship is good throughout.

V, 500.

"Then each with all his strength the bended bow
Strings, and the weapons from his quiver draws:
And first Hippocoon's arrow through the sky
Sped from the shrilling cord, and cut the air,
And struck and in the wooden mast stood fixed.
The mast was shaken, and the affrighted bird
Fluttered, and widely rang the loud applause.
Then Mnestheus keen stood forth and drew the bow,
High-aiming, and with eye and shaft at one.
The bird, alas! his arrow failed to reach,
Which sundered yet the knots and hempen bonds
That tied her foot, and held her from the mast.
She to the winds and stormy clouds took flight.
Then swift Eurytion, who had kept his shaft
Long on the string, and prayed his brother's help,
Saw in the void rejoicing, and transfixed
Beneath a sable cloud the winging dove.
She fell, and in her body fixed the shaft
Brought back, but left her spirit with the stars."

Plautus, Captivi. With Introduction, Notes, and Vocabulary. By the Rev. J. Henson. xxiv.+136 pp. (Blackie.) 2s.—Those who are old enough to read Plautus ought to have a Latin dictionary; and we are amazed to see a vocabulary added to this book. It is one more sign of the opportunism which reigns in the school world, and the general lack of any definite principles on the part of teachers. The same lack of principles is seen in the editor's work. He has, for example, a section on prosody, without explaining the principles of difference between Plautine metre and its Greek model, or the influence of the Latin word-accent upon the Greek rules. Mr. Henson seems to imagine that the metrical *ictus* is responsible for the shortening of long vowels (p. 16), whereas it was the word-accent which Plautus generally makes to coincide with the *ictus*. The paragraphs on metre (p. 17) are so vague as to be useless; it is just the principle of Plautus's "very definite rules of metre" which needs explaining. In details there is the same inaccuracy. What syllables ending in *m* were "long" in Plautus's day? What is the consonantal value of *u* (p. xvi.)? The first vowels of *fŭimus* and *Ăccheruns* are given as examples of "terminations"; and no reason is given why terminations afterwards short, such as *auctior*, should be long in Plautus. What is to be made of such a statement as this:

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"The vowels *-i* and *-u* [*sic*] are treated sometimes as consonants, *e.g.*, 197, *fūrstis*. This consonantal treatment of *-u* [*sic*] gives us such forms as *sis* for *si uis*, *sultis* for *si uoltis*." Was the first word, then, pronounced as *fwistis* (with *w*); and, if so, why is the *u* marked long? And was *si uis* pronounced *sywis*? What does it all mean? If *sis* implies anything as to *u*, it is rather that *u* was so slurred as to be inaudible; but it was a consonant, anyhow. In the notes are many things which need correction. Thus the Plautine phrase for "don't make any mistake" is *ne frustrā sis*, not *ne erres* (14); *nimis quam* is not *quam nimis*, but the *quam* is indefinite like πως (102); *eccum eccos* contains a shortened enclitic form of *eum eos* (169); *dixeram* is a preterite in 194, not a pluperfect, one of Plautus's characteristic idioms; Greek θ was not pronounced like English *th*, as the note on 274 seems to imply; *seruitutem seruit* (334), like all such phrases when the cognate accusative has no adjective, is intensive; *sedulo* is not connected with *sedeo* (385); if one thing is certain about *dĭērectus*, it is that it is not derived from *dīs ērectus* (636).

Euripides: the Medea and Hippolytus. With Introduction, Translations, and Notes. By Sydney Waterlow. xviii.+206 pp. (Dent.) 2*s.* 6*d.* net.—This book is the first of a new "Greek and Latin Series" which Messrs. Dent are publishing. There are no doubt a number of persons who like their crib to be printed opposite the text, as it is here; personally, we prefer to take our Greek and our English neat and separately. It does not appear whether Mr. Dent is to give English readers just a taste of each author, or complete editions: in fact, the aim of the series is not quite clear. We should much prefer to have the texts without the introduction. Mr. Waterlow's introduction is readable enough, true; but ten pages is not enough to discuss Euripides, not even enough for the literary and psychological questions which arise out of the two plays. Critical notes, too, should be placed at the foot of the text, not at the end. The translation is not always accurate in details; *e.g.*, there is no reference to the speaker in οὖσα δυσμενής (*Medea*, 866), which is rendered "for all we are so at odds"; ὀργάς (870) is "moods," not "outbursts"; λευκὴν παρηίδα (1148) is not "lovely face." The style is a natural modern colloquial, and was no doubt chosen on purpose to represent that of Euripides. It is far from affectation, but errs sometimes in the use of long Latin words which recall the daily press. "Not that I would complain of your previous behaviour," says Jason to Medea, as if he were a Cabinet Minister speaking of a great proconsul. The effect is really quite funny at times; but much of it is surprisingly good and idiomatic. The print is small, but clear, and the book is well got up. A frontispiece is the bust of Euripides from Naples.

The Philoctetes of Sophocles. With a Commentary abridged from the larger edition of Sir R. C. Jebb. By Dr. E. S. Shuckburgh. xliv.+228 pp. (Cambridge University Press.) 4*s.*—We have already noticed the abridged editions of the *Antigone* and *Oedipus Coloneus*. The merits of Sir R. Jebb's edition are so well known that they need no praise from us; and this abridgment will probably be just the thing for the undergraduate or the sixth-form boy preparing for an examination. It is not the thing, however, for the ordinary schoolboy, for whose use an edition should be specially made, containing much less than this, but in some respects more. We should not have said this but that we feel sure it will be used by the ordinary schoolboy, since neither he nor his masters know what is good for him.

English.

Andrew Marvell. By Augustine Birrell. 242 pp. (Macmillan.) 2*s.* net.—Mr. Birrell has added to the considerable number of biographies of Marvell now extant a book which is quite worthy both of himself and his subject. Naturally a great deal of this volume is concerned with the politics of Marvell's day, and this somewhat thorny subject has been handled in these pages with much skill and discretion. Indeed, it is not easy to determine which aspect of Marvell's career remains more vivid in the mind of a reader at the close of the volume, the man of letters and satirist, or the quiet, conscientious member of the House of Commons. Suffice it to say that in both capacities Marvell is here faithfully dealt with, and if there are fewer "Birrellisms" sprinkled on these pages than one might expect from their author, the book is intensely interesting, and is a distinct and happy addition to the series in which it appears.

The English Writings of Abraham Cowley. By A. K. Waller. viii.+467 pp. (Cambridge University Press.) 4*s.* 6*d.* net.—This is likely to be for many years to come the standard edition of Cowley's English poems, and as a volume is to follow containing his English prose and his plays, a measure of justice will be dealt to this author which he has long deserved and been denied. The text has been prepared with great care, and the volume is worthy of high praise in respect of its general appearance and serviceableness, to say nothing of its scholarship and trustworthiness. This volume contains the "Miscellanies," "The Mistress," the "Pindarique Odes," the "Davideis," and the "Verses written on Several Occasions." As a contribution to the classics of English literature it must, therefore, command respectful attention, and, once in the possession of any person of scholarly tastes, it is difficult to imagine that any desire to supplant it could possibly arise.

Forty Bible Lessons and Forty Illustrative Stories. By R. M. Brown. 254 pp. 3*s.* 6*d.* (H. R. Allenson.)—This volume has been written and compiled for the purpose of interesting children under, say, twelve years of age. It will probably succeed in a notable degree in achieving its purpose; for this impressionable period is a golden opportunity for sowing all kinds of stories in youthful minds, and these selected stories of the Bible are well worthy of the presentation they receive in these pages. The idea is not only to teach facts, but also to teach the lesson underlying each story in this volume; and the method employed is, first to get the occurrence well fixed in the plastic mind of childhood, then by aid of a little verse (which is called a "memory gem") to fasten it there, and by means of some manual exercise or "occupation" to illustrate and enforce it still further (for the children are to perform these acts), and lastly, by means of a simple childish story, to make the whole process secure. A book so carefully and painstakingly produced ought to meet with ready and wide acceptance. It is not in the least "viewy"—which is a blessing!

Old Testament History. By G. Carter. 207 pp. (Relfe.) 2*s.*—This is an excellent way of presenting the history of Israel from the descent of Jacob into Egypt to the rejection of King Saul. The text is taken from the Revised Version, and all the episodes are presented in the actual words of Scripture. For class-work this arrangement may be described as invaluable, and we think the book will tend immensely to facilitate the acquirement of a clear idea of the outline of Jewish history for the period with which it deals. The notes, the short biographical

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and geographical sketches have been well done, and the book will well repay use. It ought to be followed by another dealing with the later Jewish history on the same plan.

The Book of Job. By Canon S. R. Driver. xxxvi.+132 pp. (Clarendon Press.) 2*s.* 6*d.* net.—This is a valuable attempt so to explain the text of the Revised Version as to make this biblical drama intelligible to the ordinary educated reader. It must be conceded that many difficulties disappear altogether under Canon Driver's method of treatment, and the convenient, handy form of this volume ought quickly to make it *the* popular commentary upon this Book. The notes are as condensed as possible; the text is divided into paragraphs with an argument prefixed to each; difficulties are explained and preferable alternative readings are indicated; and an excellent glossary is added. A detailed examination of this little work is impossible here, but the points we have noted should be sufficient to recommend it to the class for whom it was written; and Canon Driver's scholarship should also ensure it a lasting popularity.

Prayers for School Boys and School Girls. By W. Watson. 160 pp. (Oliphant, Anderson and Ferrier.) 2*s.* net.—This elegant little book is the outcome of an attempt to adapt a genuine piety to the spiritual needs of young people. It is written from the point of view of what Canon Liddon used to say he failed to grasp when people talked of "personal" religion. That is to say, it is individualistic piety which is inculcated in these pages; and the author's effort commands respect, even if one's own view is by no means circumscribed by the orthodox Protestantism of the writer. It may be commended even to those of us who have long ceased to be attracted by formal religion of any kind.

Southern Writers. By W. P. Trent. xx.+524 pp. (The Macmillan Co.) 5*s.* net.—This is a volume of selections in prose and verse. It is an American volume, and is principally designed for the use of classes in the Southern States. Should it find its way into English schools over here it would probably be found useful, for the knowledge of American literature which obtains in England is comparatively small—limited, as a matter of fact, to O. W. Holmes, Longfellow, Mark Twain, and a few humourists. This bulky volume introduces readers to a large number of authors who are all but unknown, even by name, on this side of the Atlantic; and while it is perhaps highly serviceable as an introduction to the history of America and to a section of American literature, it makes a reading-book of an intensely interesting nature. Brief biographical and critical notices of the authors drawn upon are affixed to each selection, and the statesmen and orators of the Southern States contribute a handsome share to these pages.

The King's English. By H. W. F. and F. G. F. 1–370 pp. (Clarendon Press.) 6*s.*—This book, which is the descendant of "The Queen's English," "The Dean's English," "Errors in English," and others, is nothing new, but it is admirably done. The scheme is very simple. The compilers have a chapter on vocabulary, one on syntax, one on "airs and graces," and one on punctuation. All these are necessary, but, if we might have had a word, the first two chapters would have been lengthened at the expense of the others. The second part consists of sections on euphony, quotation, grammar, meaning, ambiguity, style. All is well done by clear thinkers and plain speakers. There is, as one would expect, some hair-splitting; there are many statements to which the reader will take strong exception, but there is, so far as we can see, only one injustice. It will not do, notwithstanding an explanation in the preface, to quote *Daily Telegraph* correspondence as *Daily Telegraph*. When "*Daily Telegraph*" is added to any statement, the statement is understood as being made on the authority of the paper; no newspaper can suffer the syntax of its correspondents to go forth to the world as its own. Will these compilers confer a further benefit on the public by compiling from books, newspapers, and debates "The King's Logic"?

Coriolanus. By A. W. Verity. xxxvi.+308 pp. (Cambridge University Press.) 3*s.*—Mr. Verity in this volume continues his notable contributions to Shakespearean literature in an edition of this play which is almost ideally perfect. Of his labours as an editor of Shakespeare enough is now known to ensure any volume in this wonderful series all the appreciation it merits. This volume reproduces all the familiar features of the series, and it is interesting to note points in which the present editor owes something to the great work of Prof. Bradley. The section of the introduction which deals with the Elizabethan "colouring" in this tragedy is well worth attention, as are also all the notes and the extracts for North's Plutarch, and the appendix on dramatic irony. This volume is as good as anything Mr. Verity has done.

Selections from Prescott. By Oliphant Smeaton. xvi.+269 pp. (Dent.) 1*s.* net.—We are inclined to give great credit to the compiler of this volume, not only because he has, from a purely literary point of view, done his work well, but because he has managed to hit upon an original idea for a reading-book. Prescott is read by those of mature years, but he is little known to boys and girls. Yet he belonged to that school of historians who, whatever their deficiencies in scientific equipment, knew how to make history interesting. Mr. Smeaton has strung together a number of Prescott's more exciting episodes in the form of a continuous narrative, and supplies a very readable introduction. Altogether the volume is of great interest, and lends distinction to the series in which it appears.

The Psalter in English Verse. By John Keble. With an introduction by the Archbishop of Armagh. 444 pp. *Essays from the Spectator.* A collection of Steele's and of Addison's papers on the minor morals, made by W. A. Lewis Bettany. 431 pp. *Poems by Christina Rossetti.* With an introduction by Alice Meynell. 200 pp. (Blackie's Red Letter Library.) 2*s.* 6*d.* net each.—We have often expressed our appreciation of the volumes in this daintily produced series. It is only necessary to say of the latest additions to what has become a favourite collection of classical masterpieces that they are well chosen and maintain the reputation for beauty and general excellence won by previous volumes in the library.

Matthew Arnold's Merope, to which is appended the Electra of Sophocles, translated by Robert Whitelaw. By Prof. J. Churton Collins. vi.+169 pp. (Clarendon Press.) 3*s.* 6*d.*—This elaborate and scholarly edition will be welcome to the general reader who may wish to know in detail what typical Greek tragedies were like, and also for students in schools. In these pages it is possible to study both these selected works with care and thoroughness, for Prof. Collins has spared no pains to make this book a satisfactory introduction for those who would

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desire an acquaintance with Attic tragedy in its most perfect form. The metrical schemes of the choruses are deserving of close attention.

Poetic Gems. vi.+184 pp. (Chambers.)—There are many points about this little compilation which are worthy of praise, and not the least of them is the success with which it fulfils its aim of being "a selection of good poetry for young readers." In its present form it includes four parts, each of which can also be purchased separately; and these are so graded as to appeal to children ranging from ten to fourteen years old or so. Many old favourites are included in this collection, and also some pieces less widely known; but it is all excellent matter, and admirably adapted for memorising. We should like to point out that the note on Will Carleton on p. 181 would be much more satisfactory if it cleared up the confusion likely to arise between this writer, who is comparatively unknown, and Will Carleton the Irish novelist, whose fame is world-wide.

History

The Industrial History of the United States. By K. Coman. xviii.+343+xxiv. pp. (The Macmillan Co.) 5*s.* net.—This book comes to us from America, with the wealth of illustrations, bibliography, and references to which we are now so well accustomed. To the youngest students, American history is too difficult as a whole, because of its modern and constitutional character. Even, therefore, in the early colonising days, and much more in later times, elementary books of American history give the impression that there is nothing but fighting. Books for somewhat older scholars convey the idea that Americans are all lawyers, interested in political rights and wrongs. It is only when these stages are passed, and some idea of economics is possible, that such a book as this tells the inner story of American life. Religion and commerce are still the motives of mankind, and here we have, told in clear language, the economic forces which have built up the nation known as the United States of America. Miss Coman leads us from the America of aborigines, through the periods of discovery and colonisation, through the struggle over customs and excise which led to the War of Independence, and so to modern tariffs and trusts. The book is full of matter, and is eminently useful as a guide to the understanding, not only of historical, but of present-day politics.

The Story of our Native Land and Empire. 264 pp. (Blackie.) 1*s.* 6*d.*—This is Book VI. of a concentric series of "Complete History Readers." It is well illustrated, and is supplied with summaries of the chapters and with notes and explanations. The story is correctly told, and is mainly devoted to the later stages of the narrative. The first half brings us to the death of William III., and the second to the accession of King Edward.

Rights and Duties of Citizenship. By W. D. Aston. 113 pp. (Clive.) 1*s.* 6*d.*—The chapters in this booklet are headed respectively: the Nature of Citizenship, the Citizen's Standing before the Law, the General Rights of Citizenship, the General Duties of Citizenship, Local Government and Administration, the Organisation of Elementary Education, Central Government and Administration, the Judicial System, the Army and Navy. Mr. Aston writes well and pleasantly on these subjects. There is perhaps too much "liberty" and an obvious adaptation to the requirements of the Teachers' Preliminary Certificate examination. But many who are not candidates, as well as those who are, will profit by the perusal of this book.

A School History of Somerset. By W. Raymond. xii.+217 pp. (Methuen.) 1*s.* 6*d.*—We have already noticed two or three volumes in this series, and this is as good as its predecessors. There is the same abundance of illustrations and good topical history. In this latter respect, this book on Somerset is better than the others. It is less a history of that part of England called Somerset and more of a local history. The boys and girls of Somerset will learn from its pages to take an interest in that which surrounds them.

A Century of Continental History, 1780–1880. By J. H. Rose. xii.+481 pp. (Stanford.) 6*s.*—This is the fifth edition of Dr. Rose's book. He has altered for the better some phrases, and revised some of his judgments. He has also made additions, partly of additional paragraphs at the ends of the chapters, but mainly consisting of a supplement descriptive of events up to the year 1900. This supplement has been written cautiously, for Dr. Rose knows the difficulty of writing almost contemporary history.

Readings in European History. By J. H. Robinson. Vol. II. xxxii.+629 pp. (Ginn.) 7*s.*—We have already noticed Prof. Robinson's first volume, which dealt with the Middle Ages. This, the second volume of a work consisting of "extracts from the sources chosen with the purpose of illustrating the progress of culture in Western Europe since the German invasions," covers the ground from the Renaissance to the present day. The temptation for the reviewer is to think of what is omitted, but when we consider the long period covered, the crowd of events in every age, the superabundance of material available, we prefer to express our thanks for what is given rather than dwell on the necessary omissions. All the selections are translated. There is a sufficient running commentary, and there is an index as well as a table of contents. Memoirs, contemporary or nearly contemporary histories, official documents, &c., are drawn upon in more variety than it is possible to describe without a long article which would degenerate into a mere catalogue. Only one reflection occurs for adverse criticism. Why, we would ask, if we are to travel beyond the purely political, why does Prof. Robinson give us, in his last chapter, only illustrations of "natural science" and of "applied science," and not also of religion, literature, and art? But, with all its omissions, we heartily recommend this volume, as we recommended its predecessor, to the earnest teacher of history. It will help him to realise the past; it will serve as illustrations for his classes.

Mathematics.

Symbolic Logic and its Applications. By Hugh MacColl. xi.+141 pp. (Longmans.) 4*s.* 6*d.* net.—The study of logic is usually considered to be even less attractive than that of mathematics, while symbolic logic is still less appreciated. At the same time, it ought to be more generally recognised by teachers of mathematics that the discipline so frequently claimed for mathematical studies may be very imperfect unless the teacher has himself received a good logical training; there is good evidence, even in the most recent text-books, that mathematicians are often guilty of breaches of the most ordinary logical canons. Symbolic logic is a comparatively recent development, but it seems not unlikely to become a weapon of considerable power. It would not be easy to find a better introduction to the subject than the book under notice—the work of one of the chief pioneers in a difficult but interesting field.

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Advanced Algebra. By Herbert E. Hawkes. xiii.+285 pp. (Ginn.) 6*s.* 6*d.*—The title of this book is somewhat ambitious. The first 150 pages do not, so far as the subject-matter is concerned, go outside the limits of many of the elementary treatises; the topics that are of a more advanced character are practically restricted to the chapters on Complex Numbers, Theory of Equations, and Determinants, though a slight sketch is given of Continued Fractions, and there are two pages on Probability. The best sections in the book seem to us to be those that deal with equations; considerable attention is paid to the question of the equivalence of two systems of equations, and the special chapter on the theory gives useful hints regarding the solution of numerical equations. The style is throughout simple, and the book is well adapted for pupils who have already made some progress in algebra and who wish to gain some insight into more advanced parts of the subject. It may be added that answers are not given.

Elementary Graphic Statics and the Use of Tables of Sines and Tangents to Four Places of Decimals. By W. H. Blythe. 16 pp. (paper covers). The size of the page is $11\frac{1}{16}$in. × $8\frac{7}{16}$in. (Simpkin, Marshall.) 1*s.* 6*d.*—For pupils preparing for elementary examinations, such as the Oxford and Cambridge Local examinations, the notes here given will be found exceedingly helpful. The examples are sufficiently varied and the instructions in regard to various details connected with the drawing and interpretation of diagrams are clear and to the point.

Pitman's "Method" Arithmetics. Parts I., II., III., and IV. (Pitman.)—Part I. deals with Addition and Subtraction; Part II. with Multiplication and Division; Part III. with Long Division, Simple Reduction of Money, Addition and Subtraction of Money; and Part IV. chiefly with Multiplication, Division and Reduction of Money, and some Weights and Measures. The treatment illustrates the principles explained in the book *Method in Arithmetic*, noticed in THE SCHOOL WORLD, vol. vii., p. 237; the examples are stated in a concrete way that may be expected to appeal to the beginner, and are not too hard. The parts contain from 36 to 48 pages each, and the price of each of the first three parts is 2*d.* (paper covers), 3*d.* (cloth), the fourth part costing 3*d.* (paper covers), 4*d.* (cloth).

Chambers's "Thorough" Arithmetics (Scheme B). Books II. and III. By W. Woodburn. 36 pp. and 40 pp. (Chambers.) Paper covers, 2*d.* each.—Book II. contains the Simple Rules to 999 and Money Rules to £10; Book III. the Simple Rules to 99,999 and Money Rules to £99. The printing is good, and the exercises seem to be suitably graded.

THE following books on arithmetic have been received; short notices of some of the earlier parts in each series have been already given in THE SCHOOL WORLD, and we therefore simply note the new parts that have come to hand:—*Blackie's New Concentric Arithmetics*, Book III. (4*d.*); *Blackie's Model Arithmetics*, Three-term Scheme "B," Book V. (3*d.*); *Clive's Arithmetics* for Scheme B, Standards I.–VII., one book for each standard (a reprint of "The Primary Arithmetic" already noticed, the only difference apparently being in the numbering of the articles, exercises, and pages); *Chambers's Thorough Arithmetics*, Books VI. and VII.; also Teachers' Books for use with the "Thorough Arithmetics," Nos. IV. and V.

Science and Technology.

An Introduction to Astronomy. By Prof. F. R. Moulton. xviii.+557 pp. (Macmillan.) 5*s.* net.—Much more attention is given to astronomy in the colleges of the United States than is devoted to it here, and this accounts for the fact that the best text-books on the subject are being produced on the other side of the Atlantic. In general character, Prof. Moulton's book resembles Young's "Manual of Astronomy." It contains a clear and accurate account of the present position of astronomical science, and should appeal to students who do not wish merely to be entertained or amazed with diffuse descriptions of wonders and marvels of the heavens, but prefer to digest precise statements of principles, methods, and results. Questions and experiments are given at the ends of many of the sections of the book, and these will be of assistance in enabling a student to obtain a grip of the subject. There are numerous illustrations, including reproductions of many photographs of celestial objects and phenomena; but we miss the name of the late Dr. Isaac Roberts, who was the pioneer of long-exposure astronomical photography. In stating the work of practical astronomy, Prof. Moulton omits mention of spectroscopic observations, but it is scarcely too much to say that they form the most important part of modern investigation. It is only fair to state, however, that astrophysical inquiries and results are surveyed, though the treatment cannot be considered altogether adequate from the point of view of the contributions made to this branch of astronomy by British spectroscopists.

New Optical Demonstration Apparatus.—Messrs. Gallenkamp and Co. have been appointed agents for the supply of Prof. Hartl's optical disc, which is well worth the careful attention of those interested in the teaching of optics. The apparatus consists of a rotating graduated circular disc mounted vertically on a firm stand. The disc is white, and shaded by a semi-circular screen, hence experiments in which the actual path described by rays of light are clearly seen may be easily performed in an ordinary class-room. The source of light may be an ordinary lantern or the sun itself. The rays fall on slits, arranged at will, and travel parallel to the disc to various blocks of glass, troughs of liquid, and curved or plane mirrors, which are held to the surface of the disc by milled-headed screws. The paths described by separate "rays" are most clearly seen, and angular measurements can easily be made. In a pamphlet issued by Messrs. Gallenkamp a long illustrated list of experiments is given. We may mention the formation of foci and images by means of mirrors and lenses, including caustic curves; similar results produced by the combination of lens and mirror; total reflexion in a prism or in various bent rods of glass; the splitting of a bundle of parallel rays falling on the refracting edge of a prism; refraction by liquids in a semi-circular trough; and the formation of the rainbow, in which experiment the rain-drop is represented by a thick circular plate of glass. The number of "rays" traced may be varied from one to seven, and either may be coloured by covering its special slit with a slip of glass, or blocked out by a strip of metal. Ten lenses and mirrors are provided for these experiments, and, with the disc, cost £5 2s. 6d. Three semi-circular troughs with additional graduated disc and screw fittings cost £1 4s. Apparatus to show total reflexion in solid glass rods is priced £1 4s. 6d. To produce diverging rays from one of the slits, a vertical glass plate in which a series of

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parallel horizontal grooves are formed has been designed by Prof. Hartl, and costs £1 11s. A most interesting attachment consists of a polarising mirror and bundle of plates and small screen which enable a large class to view simultaneously the phenomena associated with the polarisation of light by reflexion and refraction, and colours produced by larger crystalline substances or unannealed glass. By the addition of a lens, the various interference figures which are produced by small crystalline plates may be seen at a short distance from the apparatus. The polarising attachment costs £3 10s. The whole apparatus should be valuable for several reasons: (1) because each arrangement is very quickly produced; (2) the effects are strongly visible; (3) measurements are readily made; (4) the number of separate parts is small considering the variety of experiments which they render possible.

Systematic Inorganic Chemistry from the Standpoint of the Periodic Law. By Drs. R. M. Craven and G. D. Lander. xvi.+374 pp. (Blackie.) 6s. net.—So much is being written for the elementary student of chemistry that we welcome, for a change, a contribution on the more advanced side of the subject. The authors base their work on the systematic classification afforded by the Periodic law, the elements being dealt with under their respective groups more from the point of view of the Periodic System than with the idea of giving an account of the chemistry of the element itself and its derivatives. Starting with a few words about the atomic and molecular theories and valency, the Periodic System is introduced—a somewhat fuller account of the historical side of the subject would in our estimation have been of advantage here—and after this the relationship between physical and chemical properties and the law is concisely and clearly dealt with. Although a few words are devoted to the objections to the periodic classification, no attempt is made to introduce or to discuss critically any of the alternative arrangements of the elements in the table, which have been put forward within recent years. The introduction of these might well serve to encourage the critical faculty of the advanced student and enhance his interest in the consideration of the multitude of detail which follows about the elements and their compounds. In dealing with the elements, some of the more advanced portions of the subject are considered in some detail. Thus, ten pages are devoted to the stereochemistry of nitrogen compounds; and the rival conceptions of the representation of the valencies of pentavalent nitrogen put forward by van 't Hoff, Hantsch and Werner, Willgerodt, and by Bischoff are stated. This chapter is somewhat involved, even for the advanced student, and there is an absence of criticism. A somewhat fuller account of Pope's fundamental resolution of an ammonium salt into two optically active components would have been an advantage. The complex cyanides and amines also receive a section to themselves, in which Werner's work receives ample recognition. The chapter on the newly discovered elements of the helium group is very meagre and might have been considerably extended; on the other hand, far too much space is devoted to the speculations as to the origin of the elements and the nature of radio-activity, resting as they do on a very inefficient practical basis. As a whole, the book gives the impression of being too much of a compilation; and it would have been improved if the authors had treated their subject more critically. At the same time, the book contains a vast amount of information in a very condensed form and should be very useful to the honours student, especially as the price makes it more accessible than the larger handbooks.

Avogadro and Dalton. The Standing in Chemistry of their Hypotheses. By Dr. A. N. Meldrum, with a preface by Prof. F. R. Japp, F.R.S. 113 pp. (James Thin.)—This is an essay dealing with the question whether, in discussing the constitution of matter, the atom or the molecule should be considered first. It is divided into two sections, dealing with the standing in chemistry of Avogadro's hypothesis and Dalton's Atomic Theory. As an axiom, it is assumed in the preface that there is an essential difference between what are known on the one hand as laws and on the other hand as hypotheses. At the outset Gay Lussac's celebrated "Memoir on the Combination of Gaseous Substances with each Other," read in 1809, is discussed, and a distinction is drawn between Gay Lussac's enunciation of the law and Avogadro's enunciation of a hypothesis in explanation of the law in 1811. Following this, the author enters on the relation between the hypothesis and the kinetic theory of gases and adversely criticises Divers's British Association address (1902). After chapters dealing with the molecule and the atom, the position is ultimately taken that Avogadro's hypothesis may not "be regarded as a well-established truth," but remains a hypothesis—the term law being a misnomer—and, that being almost universally accepted by chemists, it has so many fruitful issues that it is the "very basis and corner stone" of chemistry. The author traces as issues of the hypothesis the molecular theory, including the modern theory of solution, the atomic hypothesis, the doctrine of valency, and the Periodic System. In the second part the author disputes Divers's verdict that the theory of chemistry, with all its modern developments, is indisputably the Atomic Theory of Dalton and points out, at the outset, that it is difficult to find out what the theory really is. This part of the essay is therefore devoted to ascertaining as exactly as possible what is the essence of Dalton's theory, considering the history of the chief systems of chemistry and finding out how much of Dalton's teaching is still in vogue. Dr. Meldrum concludes that Dalton's service to chemical theory is that, in reviewing the Atomic Theory, he gave an immense impulse to accurate thinking in terms of atoms and molecules, explaining chemical and physical phenomena in terms of atoms. In particular, we owe to Dalton the law of conservation of matter. Dr. Meldrum's essay is full of interest; its perusal will well repay the student of chemical history.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Is School Science Worth Having?

As a science teacher with twenty years' experience in a university and in secondary schools, may I be allowed to express an opinion on this question, though I am quite aware that, as an author of a practical text-book, I am to be considered by some as having done my share in ruining the science teaching of England, and as having thereby contributed to the eventual subjugation of the wheat-eating race?

That there is a place for science in every school curriculum can hardly be doubted when we consider the great opportunities it offers for studying cause and effect, and the

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practical value of the knowledge when gained; the two great questions are, I think, (1) how far are we to sacrifice the acquisition of this knowledge to the mental training effected in the process of gaining it? and (2) to what extent is the pupil to be allowed to make use of the results of others, especially in his practical work? I am, and have always been, an advocate of a common-sense method of teaching science, of arriving at results heuretically and step by step, but I maintain that it is the "heuretic-gone-mad" system that is ruining the science teaching of the country, young teachers being led to imagine that they are expected to get the reasoning power of a Cavendish out of the brain of the average British schoolboy, whereas the master must realise that it is absolute nonsense to state that a boy is never to be told anything, but that everything is to be "deduced."

As with the green leaf in the sunlight, so with the brain of the boy, two opposite processes go on; it cannot be all "Abgabe," there must be some "Aufnahme": a boy's reasoning power must be developed, granted, but only that he may eventually "take in" more; and here the ultra-heurists fail—they get nothing in, and fancy only that they get anything out of, the pupil that can at all compensate for the tremendous length of time taken up and for the most part wasted in the process; and it must not be forgotten that four hours a week, or about 150 hours in the school year, is as much as we can generally devote to science.

I have always believed in the power of the lecture-room when used hand-in-hand with the laboratory. Nearly four years ago, in the preface to my "monstrum informe ingens," I wrote:—"As a rule complete researches are unsuitable for boys; to solve completely a chemical problem, treating the subject historically and thoroughly, requires too much time . . . the combined faculties of the class, if skilfully directed, will soon solve the problem." I still hold that a boy, or even a pair of boys, should not be asked to conduct a complete research, but that different experiments or inquiries bearing on a set research should be assigned to various pairs of boys, the importance of the part given depending on their individual capacities, and that the last few minutes of the laboratory lesson should be devoted to a general consideration of the results obtained by the whole class, this being continued in the following theoretical lesson, the master performing additional experiments which the brighter children will suggest, and others which, though they did not occur to any of the class, are necessary for the completion of the research, or for the arrival at that stage of the research which the master had decided on as the goal of the week's work. In this way each boy will feel that he has had a share in the result, and his interest will be awakened and sustained.

Referring to the letters in last month's number, I am afraid I am not with Mr. Dunstan when he says that he would heurise with four, but not with forty, as I think the larger the class the greater the chance of getting something out of it. I consider Mr. Robson's final quotation peculiarly appropriate, but I think he may well let the "man in the street" "go hang," as well as those who, like modern Jehus, hurl abuse at us from high places in reply to our protests against what we consider their "sweet unreasonableness." If instead of being "slanged" (pace Kipling) we were met half-way, I feel sure that a concordat could be arrived at.

As a headmaster I am convinced that a good teacher can develop the reasoning faculties of a child in any subject, but the very usefulness of scientific knowledge is, to my mind, an argument against permitting it to be sneered out of the school curriculum in favour of the revival of Euclid cloaked in chemical garb or of a low form of chemical chess.[1] Moreover, examinations in science are not yet abolished. The teacher may feel proud of his success in making the pupil arrive at this or that result, but though this may be a feat in the eyes of the theoretical educationist, chemistry is surely far too important a subject to be sacrificed on the altar of personal vanity.

"What comes to perfection perishes." As soon as a sensible system is adopted someone is sure to arise and overdo it; it is the same everywhere and with everything. We have had "squared-paper-on-the-brain," "reform-method-gone-mad" (even ping-pong committed *felo de se*), "too much science" (English may follow), and now we have lived to see a sensible heuretic method of teaching science (adopted for years by good teachers who have not changed, nor will they change, their methods in consequence of this outburst) being done to death in defiance of common sense and experience. May it arise in soberness from its ashes!

WALTER HARRIS.

Longton, Staffs.

STARTLING as Prof. Armstrong's condemnation of the subject must have been to those engaged in teaching science in schools, it has not missed its aim if it has forced some of the profession to examine the grounds of their faith.

It is generally admitted nowadays that Huxley was right in asserting that the main object of science teaching is to fit ordinary individuals for contact with the material universe which surrounds them. This can be accomplished by a combination of two methods: by training children to observe accurately and to think logically and without prejudice, and secondly, by giving them a clear knowledge of the laws of the universe.

Students who proceed to the university or technical college can afford to neglect the second of these two aims during their school career. It is of primary importance that they should have had a sound training in scientific method. It is with this class, be it remembered, that Prof. Armstrong has to deal; it is on a knowledge of them that his conclusions are mainly based. With regard to this class there is perhaps ground for his indictment.

But the generality of children who pass through our secondary schools do not proceed to college or university. Their education is ended when they leave school at the age of sixteen or seventeen. Are they to spend their science periods, too short already, entirely in the slow, plodding research which Prof. Armstrong recommends, learning no facts save those they acquire from their own practical work, suggesting their own methods, and receiving only a limited amount of guidance from their teachers? The knowledge of natural law thus gained may be peculiarly the possession of the child, but the ground covered in a year's work will be painfully small. Is it right that the majority of children should begin life knowing only the few facts they can gather as the result of their own research, with popular prejudices firmly fixed in most subjects, left to make their way through the world without benefit from the accumulated knowledge of past generations? It is asserted that the student trained to think clearly will easily in after life gain the scientific knowledge he needs, but experience shows how seldom it is that men and women after leaving school have the time,

[1] I hope I shall not be taken as speaking in any way slightingly of chess; on the contrary, I look forward to the time when a weekly lesson in the game will be a regular part of every school curriculum.

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even if they have energy and steady resolution, to master a subject the foundations of which have not been laid earlier in life.

Nevertheless, small as is the store of facts appropriated by the research system, it is of infinitely more value than the knowledge gained by the old method of cram. The process of absorption from a text-book was fatal to the faculties of the student.

But is it not possible to combine these methods—to provide that the student shall acquire much of his fact as the result of carefully guided research, and yet to connect and amplify the knowledge thus gained by means of theoretical lessons and demonstrations, as well as to rivet the facts by examples and problems, practical as well as numerical? If we can believe the evidence afforded by the text-books published, it is on these lines that for twenty years a reform of science teaching in schools has been steadily proceeding. Long dead is the divorce of theoretical from practical work, with its accompaniment of aimless "test-tubing." Dead also is the lecture followed by laboratory work, which was mere imitation of experiments first performed by the master.

It is not denied that present-day methods have their dangers. Teachers of science subjects need perennial reminders that a child must *initiate*—if he is not to become a mere machine for the accurate performance of directions. It is still, even with our reformed methods, much easier to tell a boy what he ought to observe or what conclusions he ought to reach than to make him worry them out for himself. Children of all ages will, if permitted, pester with questions rather than try to find out without help. Mental inertia is the besetment of schoolboys, if not of schoolgirls! But the avoidance of such difficulties depends rather on the patience and resolution of the teacher than on the method he follows. It needs even greater patience to encourage scholars to tackle new problems and themselves suggest methods of overcoming practical difficulties. The suggestions received are often so vague and worthless that it is easy to forget their value as a mental training to the scholar. It is unlikely, however, that many teachers allow their class to proceed to an experiment without first ascertaining whether its object is clearly grasped.

In public schools the older methods linger most persistently in the upper forms, where boys are being prepared for the examinations of the older universities. But here it is evident that the fault lies mainly with the examining bodies, since science masters have more than once appealed for the reform of examinations, such as those for entrance scholarships and for the certificates of the Oxford and Cambridge Joint Board. It is by insisting on the reform of the syllabus of such examinations that the greatest help can be given to science teaching in secondary schools.

G. C. Donington.

The Grammar School, Leeds.

Blackie's Latin Texts.

I am much obliged for your reviewer's paragraph on *Blackie's Latin Texts* (p. 231). Most of the instances he quotes are misprints, and they shall be corrected; in particular, all examples of *-vu* should have been removed. For the accusative plural *-ēs*: *-īs* the same consistency was not aimed at. The last list contains words on which there may be a difference of opinion; but I have followed the rule that all vowels are long before *gn* and *gm* (hence *cōgnōscere*, *māgnus*, *tēgmen*). *Cēdo* naturally makes *cēssī*, *cēssō* (and there is also direct evidence in the transliteration *ἀντεκήνσωρας*, see Marx, p. 22); *iūssī* has the apex on *i* in certain inscriptions, and is also spelt *iousi*; *mūltō* also often has the apex on *l*; *mīsceō* has *ī* because of the lost *g* (root *mig-*), and there is additional evidence in Romance for *mīxtus*, *mīstus* (*nōx* and *ūlterius* are misprints).

The general rules for these things are found in all good grammars, so that I did not think it necessary to print them; but it will be quite easy to do so. The Classical Association, however, has a booklet on the subject of spelling and quantity which ought to appear soon.

Cambridge. W. H. D. Rouse.

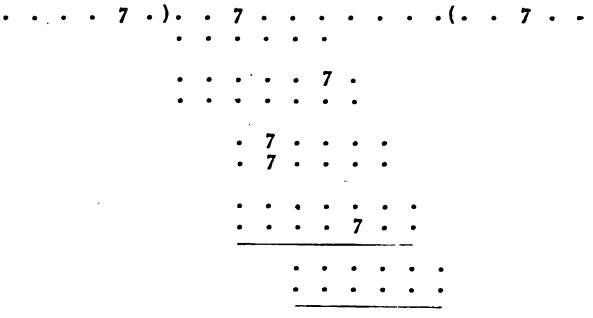
Dr. Rouse overstates the case when he says the general rules for these things are to be found in all good grammars. It is because the grammars are not in agreement that it is advisable that he should state those he follows. If, for example, he had turned to Hale and Buck's grammar referred to in the review, he would have found in § 18 that the rule that vowels are long before *gn* is not accepted, and in § 20 that vowels are short before *ss* except in contracted perfects, because an original *ss*, when preceded by a long vowel, became *s*. Lindsay, on p. 111, says it is unlikely that *cessi* (though from *cēd o*) and *iussi* (though the spelling *ious-* occurs on old inscriptions) had a long vowel. Stolz (p. 279) supports *iūssi*. Lindsay, on p. 479, gives *mīsceo* (as proved by the Romance forms). It was to increase the usefulness of the texts that the suggestion was made which Dr. Rouse says it will be quite easy to accept. His letter in the June number of The School World disarms much criticism.

The Reviewer.

The Seven Sevens.

The following original problem may interest some readers of The School World. The problem, as will be seen, consists of an ordinary long-division sum in which some of the figures are replaced by dots. There is one, and only one, solution possible. W. E. H. Berwick.

The Grammar School, Bradford.



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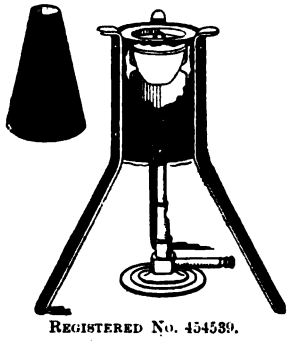

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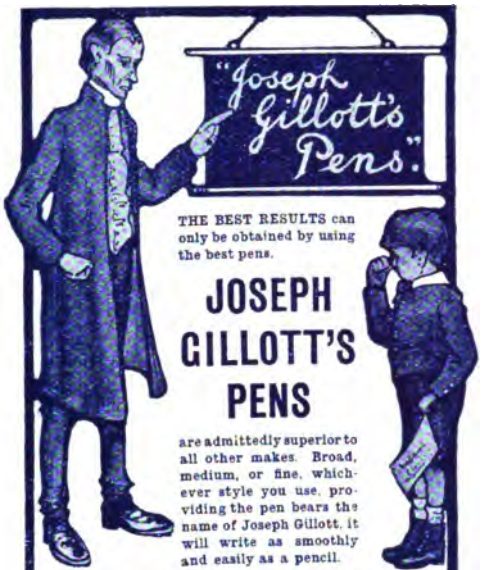

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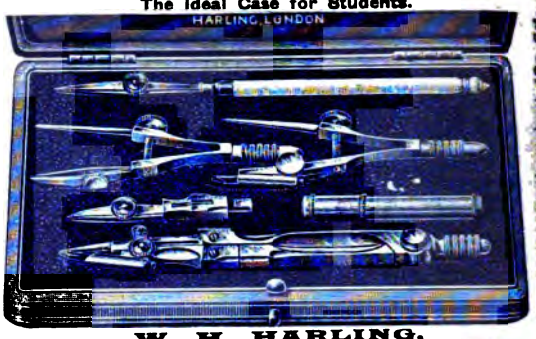

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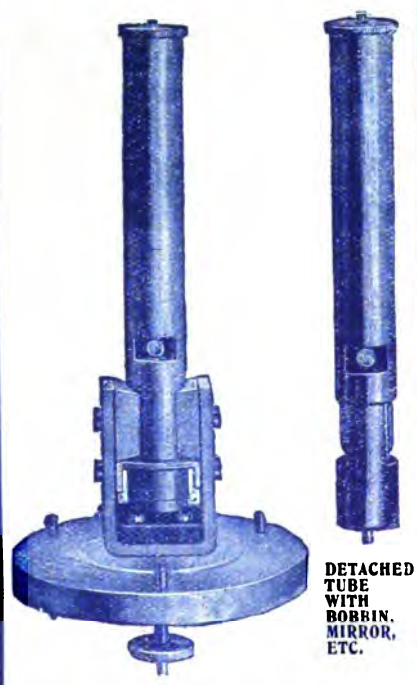

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The School World

A Monthly Magazine of Educational Work and Progress.

No. 92. AUGUST, 1906. SIXPENCE.

THE ADJUSTMENT OF THE CURRICULUM.

By A. T. POLLARD, M.A.
Late Headmaster of the City of London School.

"IT is my experience that, perhaps just because education is such a dull subject, it requires a painful amount of iteration to make people really alive to the bearings of an educational question." So said the late Prof. T. H. Green, and it is my belief that we cannot too frequently go back to solid earth in educational matters if we are to make true progress. The object of school education professedly is to make the best of each person taught, whether boy or girl. This is the touchstone by which any educational system must be tried; it is a platitude, but it is a general experience that it is the platitudes which most want driving home. Just as the schoolmaster who has devised a neat epigram on a pupil for the terminal report finds that he has failed, for it almost invariably sets the parent on the side of his injured son, so the person who writes on educational matters had better avoid epigram. Having made this apology for dulness, I make no excuse for dealing with a few very commonplace matters.

There was a time, and it is not yet entirely past, when a school was judged by the successes of a few clever boys; personally, I have welcomed the successes of such boys, but it cannot be too emphatically stated that they may prove little or nothing as to the efficiency of a school at large; they may even prove just the opposite: they may be an indication that a school is organised with a view to such successes, that what is taught in the middle and lower parts of the school is just that which is best adapted to selecting out the boys who have the qualities by which successes may subsequently be gained. Until the public realises rather more that the clever boy is himself the chief factor in his own success, a true appreciation of schools will not be possible, and there will not be the requisite stimulus to schools to do their great duty—to make the best of each and all of their pupils, I do not mean by greater attention, but by suitable methods and curricula.

There are signs of grace in plenty; we have the classical schoolmaster seeking new methods for the sake of getting his boys to understand the spirit of the authors that they read, though it is questionable whether the spirit may not often be beyond them; we have the modern language master inventing rapid methods of acquiring conversation in modern foreign languages, though it may be that they are only applicable to a portion of his pupils. All this is satisfactory, in a sense, but for my part I should like to see questions of method and curricula approached more exclusively and more scientifically from the side of the average pupil.

There are certain facts in education which cannot be ignored; most pupils remain at school for a limited period; they differ in their mental gifts, in different subjects and in the same subject—differ most widely; they are taught, for the most part, under definite conditions as to size of classes and hours of work, and the general capacity for book-learning is not high. A schoolmaster must address himself, in teaching a large class, to a point at least between the middle of a class and two-thirds way down from the top. Most boys throw books aside on leaving school. These things being so, it becomes a very necessary problem to ascertain what methods of teaching should be adopted, and in how many subjects a class of boys, mostly average boys, can be profitably carried along together with a view to the best total result. It seems to me that, without impeaching the zeal of most painstaking masters, the method adopted may be one which, in the circumstances, is not adapted to the mass of the boys, and that the curriculum may contain a wider variety of subjects than can be made educationally profitable to large classes. Psychology examines the conditions under which the mind works, and we are learning to apply its conclusions to teaching; the limitations under which schools are conducted require equal attention in educational discussions.

The true way to approach a readjustment of our methods and of our curricula cannot but be to start from the conditions under which teaching is given. Methods and curricula laid down originally for special boys or by clever men for ordinary boys are responsible for much educational failure. It is notorious that a very clever man often fails as a schoolmaster because he has no sense of proportion in teaching, and cannot

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get down to the level of his pupils, and it is equally true that an educational system may fail because it takes inadequate account of the boy or girl conditions with which it deals. The sure way, in the practice of teaching, is not to fix attention too exclusively on the ideal, which the clever boy may attain, or to think that nothing is accomplished unless all is accomplished; but to see that what we teach is all to the good—in other words, that nothing which we teach requires undoing or doing over again; we may then teach with a sanguine optimism as regards the ideal, not being discouraged ourselves, and not discouraging our pupils if it is not attained. But before we can arrive at this happy temper we must examine our methods from the point of view of what is attainable by the mass of boys at each stage, and we must be sure that we are not sacrificing quality to quantity by a too extended curriculum in the middle and lower parts of a school.

Perhaps the question of a too full curriculum is the most pressing at the present time; it is a matter down for consideration by the Educational Section of the British Association at its forthcoming meeting. The educational value of this or that subject has been interminably discussed; methods of teaching are being forced on everybody's attention; the one question which has scarcely been dealt with is that of lightening the curriculum. The division of schools into sides has arisen out of the obvious impossibility of teaching all subjects to one set of boys, but the curriculum, nevertheless, still wants lightening, and the speakers at the British Association could not do a better service to schools than by pointing the way, and lending support, to modifications in this direction. At present all the pressure is in the direction of more subjects and fuller treatment of each. The educational training of the country depends on the proper balance of subjects as well as on methods of teaching; the curriculum may be so crowded that, through limitation of time, good methods do not find reasonable scope, and the teaching in a subject fails to bring out the best in the pupil. It may be a delusion of increasing years, but I often think that we learnt more in the past because we learnt less.

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ALL questions relating to the teaching of arithmetic depend ultimately upon the reason for which it is generally included in every curriculum. Is it a subject like book-keeping and shorthand, of little educational but of great practical value, or, like the classical languages and history, of little practical but of great educational value? Of the arithmetic taught in secondary schools only a small part is utilised in after life. Everyone should reach the "bill" standard, that is, should be able to add up columns of money, to reckon the cost of various commodities, $13\frac{3}{4}$ yards of cloth at 2*s.* $11\frac{1}{2}$*d.* a yard, $3\frac{1}{2}$ railway tickets at 5*s.* $4\frac{1}{2}$*d.* each, to deduct a discount, to find a batting average, and to express statistics as percentages. Except in special cases, does the ordinary man or woman in the affairs of life require more advanced knowledge?

Educationists exhort us to make our arithmetic practical. Beyond bill arithmetic all other calculations in business are effected by ready reckoners, tabulated results, and the slide rule. After our pupils have achieved the bill, are they to be drilled in the use of these mechanical substitutes for thinking? Is this the education of the educationists?

Does the practical man take a house at a reduced rent, finding to a penny the amount at compound interest saved in ten years, on condition of doing his own beautifying; and then find the number of yards of paper for his drawing-room, carefully deducting for door and windows? Will he start to town between 8 a.m. and 9 a.m. when the hands of his clock are at right angles? Will he mix teas at 1*s.* 10*d.* and 1*s.* 3*d.* a lb. so that he may gain $7\frac{1}{2}$ per cent. by selling the mixture at 1*s.* 9*d.* a lb.? Will he calculate how much stock he must transfer from one investment to another in order to increase his income by £15? We may be quite sure that he will not make his calculations in this to him unpractical way, but will deal with them in a more businesslike way. The epithet *practical* can hardly be applied to such arithmetical questions as these. All practical arithmetic seems to be included in the bill standard.

Arithmetic would be made one of the three R's of the primary school from the utilitarian value of the bill, even if it had no other educational value. But why in the secondary school is more advanced arithmetic considered so important? It may be that it is generally confused with and deemed a part of the bill arithmetic, and consequently its reputation depends on a somewhat mistaken idea; or, if its high estimation is justifiable, the reason can be only what is implied in the title of one of our earliest English arithmetics, that the study of it tends to sharpen the wits. If the advanced arithmetic affords good mental exercise and education, so also must the bill arithmetic. Why then is there so great a tendency to teach both kinds by rote and rule? That surely deprives the sub-

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ject of nearly all its wondrous power of stimulating the mental faculties. Teachers (?) who follow this method may give their customers a full pint, but it contains far more water than milk.

Books provide the schoolboy with most admirably reasoned out proofs and processes; but when he has a sum to work, he finds in the book what he thinks to be a similar one, and then, without attending to the reasons for the process, works his own in exactly the same way. Is not this constantly done, sometimes even in other branches of mathematics, at all stages of the school career? There is nothing apparently that a child finds so difficult as to follow a train of mathematical reasoning. The child can of course be forced to read through the logical explanation, and may even in some cases be got to reproduce it satisfactorily; but stuffing the child with this rich food is apt to bring on an attack of mental indigestion. Let this rich food be served out a little at a time and taken with plenty of plain fare, and your child will grow up mentally healthy and vigorous.

To prevent unintelligent imitation of worked examples it will be found best to supply children with a book containing questions only, no hints as to methods being given in the book. The methods and explanations should be got from the pupils themselves by plenty of *viva voce* questions carefully suited to their capacity and by a series of examples graduated from very simple cases, well within their experience, to cases just as hard as they can manage. As the pace of a cavalry charge is that of the slowest horse, so the bottom child of the class regulates the rate of progress. A teacher's merits are often judged from the progress of his best pupils, who probably need very little teaching, but get on almost without help. The real test lies in the progress of the tail of the form; the shorter the tail, the better the teacher. The bottom children should be plied with numerous questions, with occasional questions to the others just to keep them awake; the subject must not be left until even the slowest have done something. The sharpening of the wits comes far more from this question and answer drilling than from the subsequent written work. In *viva voce* work preparatory to written work, it is better to err on the side of too little explanation; every case should not be explained, some difficulties should be left for pupils to think out individually. At first, in order to make them think, the rule should be withheld, and examples set which can be easily thought out. As soon as they have got the rule, all thought ceases. If they are asked for a reason the majority will quote the rule.

As soon as it is found that the children are working by a rule, either of their own making or learnt elsewhere, the teacher can no longer withhold a rule; all he can do is to see that the rule is the best, and that the reasons for it are thoroughly understood.

When all possible mental training has been got out of a branch of arithmetic, the rule or formula should be given in order to save useless labour in the future—that is, the rule or formula should be kept back for the last revision. Those teachers who have an inspector to dodge or an examination to cram for will no doubt find that rules and formulæ form the easiest and speediest road to their immediate goal; but at the end of the school career the rule and formula crowd will be found far behind those who have been taught to rely more on their thinking power.

By way of illustration the addition of fractions may be taken, in which there is a fair amount of difficulty, and in which, if the whole principle is to be understood completely, a fair amount of illustration is required. The bare rule could perhaps be mastered by seeing a couple of examples worked on the blackboard. The rule would enable the class to "satisfy the examiner" and show a "competent knowledge" of the subject. By teaching (?) the bare rule half the time would be saved (!) and the class would make more progress (!). Working examples without a thorough understanding of the principles no doubt gives the class some mental exercise and promotes facility in arithmetical operations, and allows them to pass on sooner to other branches of the subject. Nearly all the mental discipline is thus lost, and the knowledge gained is of little practical value.

There are very few teachers who would not give some sort of explanation or formal proof of the rule. If a child can get hold of a rule, he is generally quite content and wants nothing more. But a long-sustained mathematical argument is most repugnant to his mind, and he will give the explanation or proof as little attention as the teacher will allow. By a series of questions such as follow, and then similar examples worked by himself without aid, the average child could probably be got to understand the process.

(i.) What is $\frac{1}{4}$ of a penny? How many quarters of a penny are there in $\frac{3}{4}$ of a penny and $\frac{1}{2}$ of a penny? in $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ of a penny? What is the 12th of a foot called? How many 12ths are there in $\frac{1}{3}$ and $\frac{1}{4}$ of a foot? in $\frac{1}{2}$, $\frac{1}{6}$ and $\frac{1}{4}$ of a foot? How many 10ths of a cm. in $\frac{1}{2}$ and $\frac{3}{5}$ of a cm.? Add together $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{8}$ of a pound (money), giving the answer as a fraction of £1. Add together $\frac{1}{2}$, $\frac{3}{5}$, $\frac{1}{4}$, $\frac{5}{10}$ of £1.

(ii.) Add together $\frac{2}{3}$ and $\frac{1}{4}$ of an apple, explaining how it is done. $\frac{5}{6}$ and $\frac{1}{2}$; $\frac{3}{5}$ and $\frac{1}{2}$; $\frac{7}{10}$, $\frac{1}{4}$, and $\frac{3}{5}$.

(iii.) What is done to 3rds and 4ths in order to add them? to 6ths and halves? to 5ths and halves? to 10ths, 4ths, and 5ths?

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Some of these questions may be written on the blackboard, and the working written at the dictation of the child. The class must be shown the tidy method of working before they begin their written work.

The children will very soon find the L.C.M. rule for the common denominator, and then the teacher must make the class see the reason.

What other fractions is $\frac{2}{3}$ equal to? How can all these denominators be described? What fractions is $\frac{1}{4}$ equal to? What are these denominators? What denominators can be used

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for both fractions? What are these denominators? Which is the best to use in adding these fractions? Why? Repeat these questions with $\frac{1}{3}$ and $\frac{3}{4}$, &c.

Graphic methods of adding fractions are often very useful. To add $\frac{2}{5}$ and $\frac{3}{4}$, draw on the blackboard two equal oblongs, and ask the class to get $\frac{2}{5}$ of one and $\frac{3}{4}$ of the other. The result will be clearer if one is divided by vertical and the other by horizontal straight lines. After some questioning it will be seen that these fifths and quarters must be divided into smaller parts all of the same size and shape. This is done by horizontal lines in the first and vertical lines in the second figure. Time would be well spent if a preliminary lesson were devoted to this graphic method, the class, after being sufficiently questioned, solving easy questions by constructing their own figures. They may be told to use different figures—lines, oblongs, circles—in the different questions.

More advanced pupils should be made to give, sometimes orally, sometimes in writing, the full logical proof of every rule and method. This is a part of the subject omitted from most examination papers, and therefore omitted by teachers. But it affords practice in continuous reasoning quite as good as that found in geometry.

Most excellent practice in mental arithmetic is to be obtained from miscellaneous examples which do not fall directly under any rule. The easy questions may be worked out completely, those involving long calculations should have the method of solution sketched out to the end. This will get the class into the way of writing down the complete result before the various calculations are begun. More use can then be made of cancelling and approximating. Different methods should be asked for; the class should point out the merits and demerits of the various suggestions. A revision of the more important results at the next lesson will be very useful, and may be utilised against the inattentive.

After fifteen or twenty minutes of oral work the pupils may be set to work out on paper somewhat similar questions; each child will thus have to repeat the reasoning unaided and under slightly different conditions. The mental practice in rapidly solving a problem must produce more rapid and accurate thinking in the written solution, so that the time apparently wasted in *viva voce* drill will very soon be found a good investment even as regards written work only.

There are probably very few teachers who rely solely on rule of thumb methods, without any explanations or questions to the class, and on the other hand very few who do sufficient in the way of mental arithmetic. What is needed for the improvement of the teaching of arithmetic is not any great change in method, but a large increase in the amount of oral work. Nothing is needed which lies beyond the powers of an ordinary teacher willing to devote some thought beforehand to each lesson.

As long as a teacher's work is tested by the written solution of a few questions of common types, falling under well-known rules, can he in reason be expected to teach anything but those rules? Many an assistant-master knows that his teaching is not so good as it might be, and knows too how he could make it better, but sees that the change that he would like to make will not pay in the next examination of his class. The teaching of arithmetic is left almost entirely in the hands of assistant-masters.

As headmasters have probably taught very little arithmetic in their past career and teach less at present, as inspectors are in a worse case, having often had but little experience in teaching arithmetic, and having none at present, it follows that assistant-masters are the only persons with sufficient experience and knowledge of this subject to give an opinion of any value.

But the voice of the assistant-master, although a little louder now than of yore, is not likely to attract much attention. Assistant-masters may on their own initiative, so far as present conditions allow, do a great deal to improve the teaching of arithmetic, and indirectly through their headmasters they may effect still greater improvements. A constant striving after the ideal cannot fail to produce great results.

OBJECT-LESSONS.

I.

By O. H. Latter, M.A.
Charterhouse.

It will probably be granted that object-lessons form the most convenient and rational introduction to the more systematic study of natural science. In saying this I must not be understood to be recommending a course of such lessons as absolutely necessary for those who comparatively late in school life turn their attention to natural phenomena, though even these would probably derive considerable benefit from passing, be it but rapidly, over the road which should have become familiar to them in earlier years. The type of lesson which we are considering has for its main purposes the training of the powers of observation, the opening of the eye and heart to the things of Nature, the nurture of a spirit of inquiry, and of self-reliance born of conquest over small things. It matters not so much that every child should be given instruction as that every child should be given the wish to learn, and become convinced that he can learn much by the use of his own unaided senses, and that in so doing he is adding to his own happiness and to his powers of usefulness to his fellow-men, to his fitness for citizenship.

Biologists have for many years recognised that there is truth in the recapitulation theory; that, with modifications and condensations, every organism in the course of its individual development repeats with some degree of accuracy the stages through which its ancestors have passed in the slow struggle of evolution. The process is equally sound whether the development be that

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of body or of mind. The sanction of Nature, and the success proved through untold ages, are sufficient warrant to justify its adoption. But this does not mean that we are to insist that every learner shall laboriously toil step by step along every inch of the path trodden by the feet of those who have gone before, and who have left as a heritage to posterity the accounts of their observations and experiments. If this were so to be, the short span of human life would barely, if at all, suffice for any one of us to reach the goal of becoming up-to-date, and then where were progress? True, we must recapitulate, but we must not forget that Nature herself condenses, abbreviates, even entirely omits certain phases, and proceeds, *per saltum*, to hasten on to the period that marks the highest perfection yet attained. Thence is the starting-point for future improvement. Similarly in education, the unaided senses of an unusually clever child might conceivably and eventually enable him to find out much, perhaps all were he a genius, of what is known on some one topic before he reached the three-score years and ten. But is he to be denied all the advantages that come to us in the twentieth century from the labours of those who have preceded us, and placed us in respect of knowledge where now we stand? No; he is entitled, *in their proper place,* to make use of the short cuts afforded by the work of others. And what is the proper place at which book-learning may be introduced? At the risk of pressing the analogy too far, I will turn again to the phenomena of organic development. Of every individual animal the starting-point is the same—the unicellular ovum—and each takes the few first steps in development along the same well-worn road of segmentation; thereafter come variety and divergence, accomplished by leaps and bounds over tracts that represent vast intervals of time and keen struggles for existence. The beginning is the same in all; the beginning recapitulates, *in extenso,* what we believe to have been the course of evolution; for a later period are reserved curtailment, compression, and omission. The sure and solid foundation must first be laid, and then proceedings may be more free.

Let us now consider how all this applies to our present subject. What has been the course of the evolution of the knowledge and intellect of man in the past, and what, therefore, should be the lines on which the plastic mind should at the first be guided in the present? Conscious and intelligent appreciation of external objects, seeing with something more than the eye alone —these must have been some of the first steps in mental progress, and followed by reflection, comparison, consideration of cause and effect, crude theory, and crude experiment. Later generations eventually enjoyed the benefit of oral tradition and of written works. In fact, we might summarise the history of the growth of knowledge by inverting the familiar "Read, mark, 'earn, and inwardly digest" into "Mark, learn, inwardly digest, read." Now object-lessons are only suitable to the earlier of these stages, and I wish to emphasise this opinion, because I believe there is a very decided tendency, in our zeal for nature-study and heuristic methods in general, to carry this "marking" stage on too far and too exclusively in the course of study. We are inclined to keep pupils too late in life at methods which are obviously initial and, while eminently suitable for children between the ages of nine and fourteen, by no means the best for the *exclusive* occupation of elder pupils. By the time a pupil has reached sixteen or seventeen years he is fit for, and needs, stronger food; he requires something at which he can "chew"; he is ready not only to learn his own discoveries, but also inwardly to digest and to assimilate the more advanced material that he can obtain by reading. If once the preliminary stages have been well driven home, if he has learnt how and what to observe, how to teach himself, the habit will have become ingrained. He will be able intelligently to read what others have done, to criticise methods and results, to weigh evidence, to harbour the honest doubt that comes of faith in his own power to test the work of others, and to go on further in the search for truth.

I hold, then, that the purpose of object-lessons is not to impart information, but to train the faculty of observation—to teach the child how and what to see, how to reason on the facts obtained, and thus from the study of a few simple natural objects to arrive at a knowledge of some of the simpler scientific truths. Granted this much, in what form and shape should the lesson be given? Many teachers, being compelled by force of circumstances to teach large classes, and having before them the prospect of examination and inspection, yield to the temptation to produce immediate results as evidenced by knowledge obtained. Instead of making the members of their classes find out facts and relations each for himself, many proceed to tell the class the very things which should be held back until the children have themselves made the discoveries. That is to say, in the hands of such teachers the object-lesson becomes a lecture, illustrated, perhaps, by specimens, but still a lecture, and not a piece of individual research on the part of each pupil. This latter it must be if it is to attain its goal.

Let me illustrate my meaning by instancing an imaginary object-lesson dealing with climbing plants. Now the lecturing teacher will probably discourse in some such terms as these:—"You will notice that all these climbing plants before you, the ivy, clematis, nasturtium, pea, scarlet runner, convolvulus, white bryony, Virginian creeper, hop, honeysuckle, and bramble, have stems and branches that are comparatively weak, or at any rate not sufficiently strong to enable the plant to hold itself erect without assistance. Now if you look at plants, whether trees, shrubs, or herbs, that do not climb you will notice that they have strong stems, or else form rosettes of leaves upon the ground. Those with stiff stems and branches are able to hold out their leaves

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so as to get them well exposed to the sunlight and air. Those that form rosettes push aside and kill the plants in their immediate neighbourhood, and so prevent themselves from being overshadowed. No doubt you have often observed that plants grown in a poor light present a sickly and unhealthy appearance; their leaves are yellowish instead of green, and the entire plants are 'drawn' and leggy. Also, if you have grown geraniums and other plants in your windows you will have noticed how they always turn the upper faces of their leaves towards the light. We may obviously, then, conclude that it is very important for the health and well-being of a green plant that its leaves should be well exposed to the sunlight. Thus you will perceive a reason for these weak-stemmed plants laying hold upon some firm support, viz., in order that they may lift their light-loving leaves into well-illuminated positions, just as do other green plants.

"But if you examine these specimens that are before you, you will notice that the method and means of climbing adopted are almost as numerous as the selected plants themselves. The ivy attaches itself to walls and trees by means of roots, which spring from the shaded side of its branches. These, like ordinary roots, turn away from the light, and are devoid of green colouring matter. The scarlet runner, convolvulus, hop, and honeysuckle, on the other hand, twine their whole stem round and round their support in an ascending spiral. But even these four are not quite alike, for while the scarlet runner and convolvulus describe spirals that continually turn to the left hand, the hop and honeysuckle turn to the right. It is thus clear that, whatever it is that causes the growing-point of the stem of these plants to move round in a circular fashion, the movement cannot be solely due to the sunlight. For, if so, all alike would turn in the same direction, viz., to the right hand, as they followed the sun from east to south, and thence to west and north. Yet another method is to be seen in the nasturtium, clematis, and pea, inasmuch as these grasp their support by means of their leaves; but while the two former use the stalk of the leaf for this purpose, the pea has converted some of the leaflets of its compound leaves into tendrils that quickly wrap themselves around any object with which they come in contact."

By the same method our imaginary teacher will proceed to discuss the somewhat difficult homologies of the tendrils of the white bryony, and the more certain of the Virginian creeper and other vines, carefully pointing out the mechanical purpose of each, and the irritable nature of the tendril prior to attachment. In fact he will work hard to secure that his class shall have a thorough understanding and fairly complete knowledge of the subject, so far as he is able to give it. Now if this method of teaching is perhaps permissible in some instances, it is assuredly not so with the class of pupils for whom object-lessons are intended. The lesson just sketched might interest the whole class, and convey to each some new ideas, perhaps even cause a few of the more zealous to look at climbing plants and to watch their proceedings for themselves; but it fails in the one essential of an object-lesson. It may be an exercise in concentrating the attention and in use of the memory, but it trains no one in the use of his own eyes, it makes no one employ his own wits in arriving at conclusions and truths from the facts and relations observed. Throughout the pupils are conscious of being instructed and taught by the efforts of another, and his statements are received with loyal acquiescence and without question or original thought. In conducting an object-lesson the teacher should, as much as possible, efface himself, and act the part of an unseen guide rather than that of instructor. In a subsequent article I propose to sketch out how this may be done with the same materials as those to which reference has already been made.

ON WORD-BUILDING.

By Nellie Dale,
Mistress of the Preparatory Department, Wimbledon High School.

In discussing the subject of word-building we will take it for granted that it is our aim that the children should have an intelligent grasp of the words that they use, that they should utter them correctly, musically, and audibly, that they should have scope for the exercise of their imagination and opportunities for the widening of their mental horizon. In order to promote their physical, moral, and mental welfare, we shall try to arrange the work in such a manner as to give them as active a share as possible in it.

Before we enter into the details of word-building we must speak of the preliminary training that is given to the children; for, to enable them to build their words intelligently and independently, much care must be devoted to the early stages of their school work.

We shall first give them opportunities for exercising and cultivating the spoken language. We must therefore let them talk as naturally and spontaneously as possible about subjects likely to interest them: it is delightful when we can have the talks out-of-doors. The world of Nature will supply a wealth of subjects, and the children can be encouraged to bring flowers, pet animals, and natural objects, such as shells and pebbles, providing, when practicable, a specimen for each child in the class. The desire of expressing what they see will lead to the need of new spoken words, and, as the children have the object before them, it will help them to associate the right idea with the new word. Meanwhile, great care must be taken in seeing that they breathe properly and articulate clearly and musically.

The children are thus acquiring, by their own observation, a knowledge of colour, form, and number; they are noticing habits and conditions

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of growth and qualities, such as hardness and smoothness. Their talk is followed by their drawing on their blackboards with coloured chalks, when they try to make their chalks "tell" us about the subject under consideration. When the children have done their share of the work, they are shown a painting or drawing which the teacher has made of the subject of the talk, and this is hung on the wall of their class-room.

Stories told by the teacher and re-told by the children, poems, and songs will all help in the work that we are considering, and modelling and painting will provide further means of expression. In talks like the above it is interesting to notice the particular points that strike the children, and their drawings also are of deep interest.

When the children have gained some power of expression, they pass on to the consideration of the sounds of speech (the signs will not be taken until later). They continue their talks, and the teacher leads them to the discovery of the initial sounds of some of the words used by them. The initial sounds of words beginning with *m*, *s*, *l*, and *f* will be readily discovered, because these sounds can be prolonged, and later the children will take the sounds of *p*, *t*, and *c*. From the initial sounds they pass on to the discovery of final sounds, then to middle sounds, and lastly to the sounds in the order in which they are uttered in a word.

Their attention is next drawn to the quality of their speech-sounds, and they discover that some are breathed (or voiceless), *e.g.* *s* in "sun," and that others are vibrating (or voiced), *e.g.* *z* in "zigzag." By pressing their hands close to their ears during the utterance of the sound they find this distinction particularly marked. The production of their speech-sounds next claims their attention, and they will be able to see or feel the positions taken by the lips (*e.g.* for the sound of *p*) or the tongue (*e.g.* for the sound of *t*) for the various sounds.

Throughout the above work the children are training their eyes, ears, and hands; they are enriching their vocabulary and gaining a readiness of verbal and pictorial expression, and they will therefore be able to pass on to the learning of speech-signs, which they can now handle intelligently and independently. They gradually learn the following speech-signs, *p*, *b*, *t*, *d*, *c*, *k*, *q*, *g*, and *a*, and, in the case of each, the teacher tells a short story introducing the word, the initial sign of which the children are going to learn. They discover the initial sound (the name is not yet given), notice its quality and production, and they are then shown the sign, which is printed in blue, black, or red, according to its character as a voiceless or voiced consonant or a vowel. They study the form and make suggestions as to how it should be drawn, illustrating their suggestions by drawing in the air, and then they *print* the sign on their blackboards with coloured chalks, and illustrate the story which introduced the key-word.

They choose the locality of each sign in a tabulating frame[1] which has appropriate homes for the various sounds: *e.g.* *p*, *b*, are placed to the left, in the lip-section; *t*, *d*, further to the right, to show the progression from the lips to the gums above the upper teeth; and *c*, *k*, *q*, *g*, still further back, as these sounds are produced at the back of the mouth. The vowel *a* is placed in the section of the frame arranged for vowel sounds. Each sign is also identified by them in the book written for their use.

They have now sufficient material for building a certain number of unseen words. These words are introduced in stories told by the teacher. The children personate the sounds of the particular word (*e.g.* *cab*), and each personator takes the sign representing his sound from its place in the frame and puts it on the building-ledge. The word thus grows up under the hands of the children without having been previously seen by them. They print and illustrate the word and find it in their book, and look for the picture illustrating the story. The word represents what the children can handle independently, and the story introducing the word appeals to the imaginative side of the child.

When they have built most of the words possible with the available signs, they learn the signs for the nasal sounds, the liquids, the continuants, and the remaining short vowel sounds, using each sign, as soon as it has been learnt, for the building of words in the manner described above. They now learn how to *write*, and they will be able to practise printing and writing, and this will accustom them to both aspects of the word.

The signs for the double consonants (*e.g.* *x*, *j*) are taken next, and the children are equipped for the building of words of any length, provided that they contain short vowel sounds only (*e.g.* astonishment, unexpectedly). They will occasionally handle words containing silent consonants (*e.g.* *k*nit, *w*ren), and the silent character is marked by printing the sign in yellow. When facility has been gained in the use of the signs already mastered, the children learn the signs for the long vowel sounds (*e.g.* f*e*rn, f*a*ther, N*i*na, tr*u*th). These are arranged in a special order, and the simplest form for the sound is taken first. To avoid confusion the learning of another representation for the sound is postponed for some time, and, therefore, not until the children have learnt the simplest form for all the long vowel sounds, the diphthongs, and triphthongs, will they be introduced to other representations (*e.g.* b*ir*d, st*ar*, tr*ee*, m*oo*n).

A special part of the frame is allotted to these signs, and the manner in which they are produced will enable the children to find a suitable "home" for them; *e.g.* the *a* (father) will be placed lower down than the *i* (Nina), because the tongue is lower for *a* than for *i*.

As in the earlier work, the children use each of these new signs for building words as soon

[1] The frame designed for this purpose and the books are published by Messrs. George Philip and Son, Ltd.

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as it is learnt, and in their reading they will meet with many other words containing it. The intelligent attention that they have given to the key-word will enable them to notice these additional words very quickly.

The children also share in making a record-sheet of the signs (*e.g. er*) and key-words (*e.g. fern*), and this is particularly useful for reference when a second form for the sound (the "*bird ir*") is introduced. The practice of taking one difficulty at a time and the procedure in a definite order enable the children to handle and master words of the most irregular character, the very irregularities being a source of great interest to them.

There is scope for endless variety in the lessons, and, as the powers of the children develop, they take an increasingly active part in the conduct of them. A child can be responsible for the handling of a word in the following manner:—He introduces it in a story, chooses various builders from the class, and prints on the teacher's blackboard, whilst the rest of the class print on their own boards. When a number of words containing a particular sound (*e.g. ou* in "trout") have been handled by different children in the above manner, they all identify them in their books, and, in the large groups in their more advanced books, they are asked to name the line and column in which a given word occurs (every *third* line is numbered). They also enjoy introducing in an original story or sentence some hitherto unused words of the group containing the particular sound under consideration, and it is then the work of their schoolfellows to find the word and its position. It is a source of great pleasure to the children if the teacher takes the part of a pupil and finds the words which they introduce in their stories. It is a thrilling experience for the teacher, and he may have to submit to friendly criticism with regard to his varying speed in finding the requisite word: however, it will be valuable in that he will be able to sympathise with them in similar circumstances.

In a later lesson the "party" of words handled by the children in the above manner can be printed and written in their books, and pictures can be made by them to illustrate their stories. Throughout all the stages the children continue their daily nature and other talks, and these enable them to continue the cultivation of their spoken language and to gain an intelligent understanding of the spoken word before they have to build it, and their rooms are adorned with the beautiful plants, pictures, and specimens used for the illustration of their lessons.

The teacher will find it necessary to devote himself to a reverent study of the mother-tongue, which, in its turn, will prove a subject of fascinating interest. The gradual classification of the speech-signs in the frame by the children and their use of them for building words will help the teacher to detect and the children to correct faulty pronunciation (*e.g. f* taken down instead of *th*: in this case we shall probably find that the child is saying *f*umb instead of *th*umb): this work will also lead the children to an unconscious grasp of the science of language, and will enable them to understand cognate words (*e.g.* daughter, Tochter; father, Vater), and to take a keen interest in words derived from foreign sources.

The active part that the children take, while promoting their own welfare, will give the teacher opportunities for learning much about their point of view and their interests and pursuits, and this will strengthen the bond of sympathy between the teacher and the pupils whom he is helping to become intelligent, self-reliant, and thoughtful men and women. In order to meet their requirements he will feel the need of perpetual culture, and the wider his culture the more will he appreciate the loving pursuit of knowledge.

FOLK-PLAYS AND FOLK-EDUCATION.

By Fanny Johnson,
Formerly Headmistress of Bolton High School.

IF every woman is at heart a rake, every teacher is in embryo an actor. The secret link between School and Stage is as strong a bond as the more open and obvious connection between Church and Stage. Half the present discontents about education are due to the recognition on the one side, and the want of recognition, or even flat denial, on the other, of the part that Ritual—or, in other words, Acting—must necessarily play in the matter. At first sight, the popular ideas of a schoolmaster and a comedian suggest types of character and modes of thought as wide asunder as the poles. But a little further consideration reminds us that teachers and preachers—for in reality these two classes are one—have always naturally turned to the drama as a vehicle of thought and a means of instruction. It is only necessary to allude to the earliest extant plays in our own literature, performed by pupils of schools, and written by their instructors. The reason for this is psychological; no influence is stronger upon ordinary minds, and even upon a certain class of extraordinary minds, than the influence of the theatre.

The whole tendency, indeed, of so-called "modern" teaching is based upon just such an appeal to the senses—*mutatis mutandis*—as is made by the actor on the stage. Doubtless there will come a reaction. Children, glutted with "pictures" and real "objects," will themselves perhaps be seeking relief from sensation, and take to reflection! In the meantime, reaction has not yet set in. On the contrary, the signs are at present all for fair "theatre" weather, and in particular for a revival of the Folk-Play, in which, so far, every right-minded person must rejoice. I believe Mr. L. N. Parker, who has recently brought his Pageant at Warwick to so triumphant

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a conclusion, was once himself a schoolmaster. However that may be, he used the magnificent opportunity that man and nature afforded him precisely in the spirit of the "modern" teacher.

It goes hard with anyone who has even a modicum of instruction in the literature and history of England not to tend towards sentimentality in Shakespeare's county. Residents are sometimes dead to the stimulating influences of an historic site, but the inhabitants of Warwick were full of enthusiasm. Material of all sorts, not omitting the generally necessary though not essential requisite of worldly wealth, was ready to Mr. Parker's hands. It may be predisposed imagination that makes one find these people a peculiarly mild and beneficent folk. At any rate, I think one can hardly be mistaken in the impression of a spirit of genuine enthusiasm for the best things that was shown by the actors as they walked about the streets, wearing their pageant clothes with an air, not of uneasy vanity or self-consciousness, but as persons engaged in a business too important to admit of thoughts of self. I did not see or hear any of the vulgar sights or sounds that usually distress a refined sense on a Saturday or Sunday evening in our towns, especially after a week of any kind of revelling. This speaks surely for a refining influence upon manners, and let us hope upon morals.

The peculiar spiritual influence of the drama, as distinguished from the other arts, though this characteristic is terribly obscured in the ordinary theatre, is its fostering of *esprit de corps*. In this it resembles that other noblest of arts, architecture. It is social, not individual. Both for player and audience the presence of numbers is required. Certainly the fact that the performers engaged were actually, as well as relatively, numerous, had something to do with the almost "solemn" effect of the Warwick Pageant. It was as though the vast crowd on the arena were engaged in some representative function on behalf of the crowd of watchers—quite, in fact, in the spirit of ritual proper. And here it is necessary to utter a note of warning. For we are apt enough, we English, to value mere bigness beyond its just value. One can fancy, if this "Pageant fever" continues, that Bury St. Edmunds will be boasting that she has gathered her tens of thousands where Warwick gathered her thousands, and so on. I would rather, for my part, see a simple village play performed by and for villagers alone, than assist, even by watching, a performance which was to be exploited as a mere source of gain. In such matters, the spirit is everything. At Warwick one must credit all concerned with a zeal that rose far beyond base considerations of any kind.

It is sometimes forgotten, even in the House of Commons, that a school is primarily a place of instruction. There was a meeting once of persons interested in education, at which for some time the usual commonplaces were being uttered. At length one arose and said, "I think it would be well if the teachers in schools knew something." The Warwick Pageant was, from the point of view of this speaker, irreproachable. From beginning to end, it was highly instructive. All the Episodes were based upon historical fact, or what is almost as valuable, historical fable. And the facts were not only rigidly adhered to, in a manner that might, if anything, have been termed pedantic, but were woven into a unity such as could only be accomplished by a highly skilled playwright. In three hours the whole history of Warwick was presented lifelike before us. She, the town of Warwick, was the heroine of the piece, and her ecclesiastical and scholastic foundations, her dealings with kings and princes, the munificence of her private citizens, and her contributions to literature were all touched upon with a masterly hand. It was, as we hinted, a magnificent object lesson. No child, and scarcely a grown person among the audience, but must have been kindled to desire more knowledge of the fascinating page of its country and county history. Such an achievement is, in the strictest sense, educational.

The promoters, too, were much concerned with correct archæological detail. They claimed to have reproduced the costumes and customs of each succeeding age with the greatest fidelity. And if, in parts, the massing of persons similarly costumed and the careful blending of colour effects reminded one of the specious attractiveness of a ballet, it must be owned that here again the instructive element was, on the whole, well to the fore. The antiquarian, for instance, could hardly be unmoved by the quaint effect of the lords putting on their tilting helmets, as they uttered the sentence against Piers Gaveston, and thus giving a foretaste of the masked murderers, and black-capped judges that deal in later dooms. Such ceremonies, speaking in a pedagogic sense, arouse interest and curiosity, and thus pave the way for the advancement of learning.

The "modern" schoolmaster professes to be more concerned in the development of faculty than in the "imparting of information." Yet in the old-fashioned schools there were certain faculties, then called accomplishments, that we are apt nowadays to neglect. When Touchstone bade Audrey "bear" her "body more seemly," he gave the hint that is still, I believe, overlooked in elementary schools. Even the high-school girl is apt to be censured by her critics as wanting in the deportment that was one of the graces of a former generation. Appearance on a public stage suggests in itself some care in that respect. And the other physical graces, such as a pleasing voice and intonation, and an easy manner, naturally follow from careful training to enact a part in dignified drama. The dangers inherent in great physical attractiveness are too apparent to need citing. The comfort is that so few of us are beautiful enough to be dangerous. On the other hand, a general development of more perfect physique, such as results from being taught agility in the dance and song of the drama, is

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in itself desirable, and, socially speaking, there is the less danger when loveliness, as well as other good gifts, ceases to be the monopoly of the few. The more "useful," so to call them, faculties are also developed in the course of play-acting, where, as in the case of the Warwick Pageant, the costumes and properties are manufactured on the spot, and not bought ready-made. Everyone must have observed a marked difference in the general "handiness" of the community in districts where a craft of any kind flourishes, as opposed, for instance, to those merely devoted to trade. Actors, as a profession, are not, I believe, distinguished in this respect. They are too far removed from the times when it occurred to the inventive genius of Bottom to bring the moon on the stage by means of a lantern and a thornbush. The "devices" of the stage, properly utilised, afford an immense field for such fertile resource, and introduce, by the way, such moral virtues as thrift and tidiness, as well as the æsthetic joy in a stage property well-made. Doubtless an impetus would be given to all manner of minor arts and crafts, if the wholesome custom of home production of properties were followed in each of these folk-plays, of which the fashion seems to be setting in.

At Warwick all classes of the community seem to have worked together for the common good. The better parts were, on the whole, taken by persons of the greater social importance. It is not, and never will be, possible to make all men equal. But

> "Therefore doth heaven divide
> The state of man in divers functions,
> Setting endeavour in continual motion."

The working-class mother rarely has time or strength to enter into the enjoyments and occupations of her child in the way that middle- or upper-class parents could and should. We are fond of saying that education does not cease with the date of leaving school. But, nevertheless, development is for the most part stunted or arrested by lack of opportunity after school age. And the folk-play, combining all ages as well as all classes together, is a splendid chance for parents to acquire a little fresh knowledge themselves, and to appreciate the possibility of learning to live instead of earning a living.

Folk-plays in Germany are of more unbroken tradition than in England, and this secular spectacle is a very different thing from the Passion-Play at Oberammergau or Brixlegg. There, the actors seem bent to "glorify God," as here the leading motive would seem to be first local, and then national, patriotism. The Southern Germans, who take part in the Tyrolese or Bavarian performances, are probably less instructed though perhaps naturally more artistic, than the English proletariat. The hand of the Church is laid heavy upon them for good or evil. On the other hand, the Passion-Play is not an isolated fact. In these neighbourhoods there is a semi-professional class of permanent "peasant players," who constantly perform, during the summer at any rate, in plays whose subject is taken from their own peasant life and environment. Such plays tend to the retention of the local dialect and costume, and the indigenous dance, and are thus perhaps more interesting to the antiquarian than to the educationist. Yet the fact that a man may return easily from the plough to the stage, and *vice versa*, has its effect on the social consciousness.

The recognition that art is a necessary part of life, and yet need not be the whole of life, is perhaps the most valuable consequence of the folk-play. The psychology of acting, as of other arts, is a somewhat mysterious thing. We, at any rate, who have anything of the dramatic instinct, know that it makes for intense happiness. And happiness is one of the aims of education. Mr. F. R. Benson, who has done more in his own person to keep alive the flame of enthusiasm for classical and folk-drama in England than any one of his contemporaries, seems to have discovered in obscure places an immense number of unexpected survivals and revivals of dramatic art. His own Dramatic Revival Society, which is to be on broad lines, inclusive of every kind of drama worthy of the name, will be fed by these tiny streams of influence into a broad and flowing river. On every hand there are signs of a renaissance of English drama. Perhaps even now some mute boy Shakespeare is dreaming of a future Hamlet. It is for the schoolmaster to turn all this nascent enthusiasm to the best account. It is better for a child of the tenderest years to take a small part in some really noble play, however much beyond its comprehension, than to learn the rubbish that is put forward so often by way of "recitation" at the village-school, or Sunday-school entertainment. I saw an infant in its mother's arms at the Warwick festival, coming on as part of the crowd. One word more. It is of the essence of the Folk-Play that it should be enacted, as far as possible, in the great "out-of-doors." There would be little of Puritan opposition to the drama, were this fully recognised.

Special Method in Primary Reading and Oral Work. By C. A. McMurry. 1–198 pp. (The Macmillan Company.) 2*s.* 6*d.*—The name of the author promises bright and interesting pages and full bibliographies. Perhaps no book on education printed of late years has given so much importance to oral work as the volume before us. If we compelled teachers to study the art of story-telling, to know their own voices, to be aware of the strong and weak points in their own descriptions, we should be on the high-road to the interested school. It is not too much to say that men and women who cannot tell a story well should never have teachers' certificates granted to them. We miss, as usual, all reference to the undoubted power which children possess of re-telling, and even of inventing, excellent stories excellently, with all the refinements of admirable tone and exact gesture. But the apologist for the child is not, as yet, in print.

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THE 1906 CODE FOR PUBLIC ELEMENTARY SCHOOLS.

THE newest Code, unlike most ladies' letters, put its business end at the beginning, and, like all recent documents from the Board of Education, is most interesting reading in its prefatory memorandum. No less than seven paragraphs are required to deal with the more important changes, and we are pleased to record that these are in keeping with the spirit of the time, and with more enlightened ideas upon the education of the masses. Book after book has been written upon Disappearing London, and soon some writer must arise with a volume on Disappearing Codes. Time was when the schoolmaster went to it for his syllabus of work; time was when he scrupulously taught nothing else but what was ordered in its pages. These orders have softened into suggestions, and H.M. Inspector is not now even an annual visitor. His duties are to take a broader and more comprehensive view of the educational work being done in a district rather than in a school, and to furnish the Board of Education with instructive reports upon his work as a whole, or upon some special problems, which have either appeared as fresh difficulties, or have been successfully grappled with by earnest teachers in different areas. To this we give unstinting praise. The modern inspectors are precisely the sort of men who not only understand this phase of the work but who keenly rejoice in doing it, and the Board may feel that, however well it has been served in the past, it is likely to be more efficiently served in the future by this new regulation. The inspector himself will become a valuable adviser to the local authorities, and the machinery which connects provincial effort with imperial direction will work more smoothly and much more effectively.

Of the seven changes, two stand out as likely to have far-reaching consequences in the popular schools: the provision for organised games and moral instruction. On both these questions the public mind has been exercised for some time, but at last the movement has begun and the teachers may be relied upon to develop the suggestions for themselves. In future a game of cricket, football, hockey, or rounders may be played during the official school hours as part of the school routine. Formerly participation in organised games has been made possible for elementary school children only by the voluntary efforts of teachers outside of school hours. Most generously does the Board recognise this when it states that the sacrifice of their spare time, which those teachers have spontaneously made, has been rewarded by an improvement in the health and *esprit de corps* of their scholars, so marked as to afford every hope that a natural advance in these respects will follow the inclusion of organised games in the school curriculum. But the laity must not think that the school games end in the game itself. In business transactions we think of a definite beginning and a definite end; in training the young the end is indefinite, a long, stretched-out series of consequences more far-reaching than teachers dare to contemplate, and this is wisely emphasised by Mr. Morant when he says, "The lessons to be learnt in the playground are indeed invaluable. Children who take part in properly organised games will learn, among other things, to 'play the game,' to 'give and take,' to devote themselves to, and efface themselves for, a common cause, to feel pride in the achievements of others, to accept victory with becoming modesty, and defeat with due composure, and, speaking generally, to acquire the spirit of discipline, of corporate life, and of fair play." Of the forty weeks compulsory attendance, forty afternoons, or eighty hours, may be spent in properly organised games. A very suggestive book on games other than those mentioned in the Code, and suitable for teaching children the beginning of regulated play, is published by the Educational Supply Association under the title of "Organised Games for Elementary and Secondary Schools," by Mr. Thomas Chesterton. A very valuable pioneer article on this subject by Mr. R. Cary Gilson, headmaster of King Edward's School, Birmingham, appeared in THE SCHOOL WORLD for April, 1905.

The reference to moral instruction is in response to a widespread feeling that although their opportunities are brief, the teachers can yet do much to lay the foundations of conduct. They can endeavour, by example and influence, aided by the sense of discipline which should pervade the school, to implant in the children habits of industry, self-control, and courageous perseverance in the face of difficulties; they can teach them to reverence what is noble, to be ready for self-sacrifice, and to strive their utmost after purity and truth; they can foster a strong sense of duty, and instil into them that consideration and respect for others which must be the foundation of unselfishness and the true basis of all good manners. This hint of 1905 is now translated into action, and moral instruction should form an important part of every elementary school curriculum. The teaching may either be incidental, occasional, and given as fitting opportunity arises in the ordinary routine of lessons, or systematically and as a course of graduated instruction. The teaching should be brought home to the children by reference to their actual surroundings in town or country, and should be illustrated as vividly as possible by stories, poems, quotations, proverbs, and examples drawn from history and biography. It is important that it should be no humdrum repetition of ancient saws, but a forcible and spirited application of the teacher's own moral knowledge and moral sense. He is asked to bear in mind the famous words of Bishop Butler—"Our province is virtue and religion, life and manners, the science of improving the temper and making the heart better. He who should find out one rule to assist us in this work would deserve infinitely better of mankind than

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all the improvers of other knowledge put together."

As was inevitable, the question of vaccination comes up. Formerly the Board rigidly insisted upon the vaccination of all its teachers, and firmly resisted the dispensing powers of the late Acts. Now to remove this anomaly, the obligation is to be relaxed if the teachers declare themselves to have a conscientious objection. But very adroitly the Board throws the responsibility of the presence of unvaccinated teachers among large numbers of children upon the local authorities, which must first give their consent to the employment of such teachers.

In a modest footnote of three and a half lines a most important change is foreshadowed for August 1st, 1909. For the next three years local authorities are urged to be up and doing in providing training colleges for teachers, and, as a spur, liberal grants are to be made from the taxes to aid them in this work. It is hoped that the number of trained teachers will thus be largely increased, and that posts will be reserved for them in the schools belonging to the district in which they were trained. This does not touch the question of the supply of teachers, and school managers are strongly recommended to read Prof. Adamson's article on this subject in The School World of November, 1905, as a corollary to Article X. of the Code.

We hasten slowly, and the Board of Education, following the advice of Bacon, does not encourage experiments on a large scale, but the careful perusal of this newest Code convinces us that we are progressing. Each year our administration grows wiser, more liberal, and more really educational; and it is a source of regret to us that the general public is so keenly engrossed upon Westminster that it quite overlooks what is being done for it at Whitehall.

THE USE OF LANTERN SLIDES IN TEACHING.

By F. L. Lowther, B.A.
Headmaster of the County Intermediate School, Milford Haven.

EVERY teacher of geography and history must have felt at some time or other the need of adequately illustrating his lessons—it may be in the ordinary course of his work or for some more specific purpose. Science teachers will have experienced the same difficulty, although in their case the necessity for copious pictorial illustration of a varied character is not so indispensable. The dry-as-dust treatment of history so frequent in schools even at the present day has deservedly made it an unpopular subject, more especially in lower forms, where, owing to the large size of the classes, it is not always practicable to have recourse to pictures of historical events. Geography has not, perhaps, suffered quite to the same extent, owing to the existence of the school atlas, which has, moreover, rapidly developed of late years, and should prove an efficient aid to the teacher of geography.

Though we are fortunately rid of political maps, which were overcrowded with place-names, leading inevitably to confusion and obscurity, yet there are still comparatively few atlases which are suitable for all the various purposes for which maps are required. Few school atlases contain maps to illustrate the climate and vegetation of even the continents, the scale is necessarily small and unsystematic, while fabulous mountain-chains and non-existent rivers are constantly recurring in new and revised editions. In a few isolated cases these defects are remedied by the publication of supplementary maps and diagrams to illustrate the rainfall, density of population, land-relief, and distribution of the minerals of a particular country.

The geography of Wales is well illustrated in this respect by the Welsh edition of Philip's "Elementary Atlas of Comparative Geography," which contains an excellent series of maps, special tables, and diagrams, together with an introductory lesson in map-reading. The plates are intended to accompany Hudson's "Geography of Wales" (Macmillan), and completely meet the requirements of teachers by furnishing sufficient illustrative matter for their lessons. Under such conditions the drudgery of the usual geography lesson becomes a delight to pupil and teacher alike. No attempt has been made, so far as I know, to do the same thing for England, Scotland, or Ireland. What is required is *at least* a similar series to illustrate the geography of the British Isles and Europe.

Wall-maps are equally unsatisfactory, and for small schools they are expensive luxuries. Many of them which are to be seen hanging on school walls are hopelessly out of date, and can only be replaced very gradually as funds permit. In the Regulations for Secondary Schools, 1905, the Board of Education has recommended that for teaching of physical and commercial geography separate maps should be used for the purpose of illustrating configuration, political facts, and commercial routes. Good wall-maps already exist for this purpose, but a systematic series to explain physical conditions, *e.g.* climate and vegetation, has never been attempted even for all the continents. In addition to relief wall-maps, the teacher who has decided to deal with geography on modern and scientific methods has to provide globes of a suitable size for class-demonstration, diagrams, relief-models, and a county-map before he is properly equipped for his task. Most teachers would hesitate before applying for such a formidable list of requirements, to secure which would require more than an average amount of persistency and perseverance. Such, then, are a few of the difficulties confronted by the teacher desirous of proceeding on intelligent lines in the teaching of geography.

The case is even worse with regard to history. For illustrative purposes, we have at our disposal merely a miscellaneous assortment of genea-

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logical tables and chronological charts, colour reproductions and prints of detached historical events, for occasional use only. Hölzel's historical pictures are constructed, it must be admitted, on a systematic plan, as they contain the principal monuments of antiquity—Roman, Greek, and Egyptian—while the "Coloured Illustrations for History Lessons," published by Messrs. H. Marshall and Son, are distinctly good, though numerically small. There are other sets, published by Messrs. Hachette, Hirt and Sons, and Edward Arnold, the whole of which would scarcely meet our bare requirements. A better plan is to utilise the illustrated edition of Green's "Short History of the English People" (Macmillan) or Charles Knight's "Old England" (J. Sangster and Co.), which are sufficiently large to fix on an easel by means of a wooden ledge in front of the blackboard. In this way the pictures are distinctly visible to all when standing around the easel with the taller scholars judiciously placed behind the smaller ones, and it should be possible to convey to their minds a faithful and accurate presentation of the architecture, customs, games, and armour of the period in course of preparation. The interested classes are quite unaware that they are learning history, and this fact alone speaks volumes for the method.

Dissatisfied with these limited and unsatisfactory sources of supply, a very large and rapidly increasing number of teachers have ventured on the use of the optical lantern, which really affords the only solution to the difficulty of adequate illustration.

Many teachers are deterred from utilising the lantern in school owing to the difficulties which appear to them to be inseparable from its use, *e.g.* the darkening of the room, a convenient and continuous supply of gas, the manipulation of the lantern, and the preparation of slides. In spite, however, of these difficulties, its use is daily gaining ground as a means of intelligent and effective instruction, and there are few schools where its employment is not possible for graphical and pictorial illustration. I agree with the writer of "Lanterns for School Use" (The School World, February, 1905) that it should be frequently used, and as a matter of course, and not merely as a reward. It should be an institution in schools of all grades, and should form an essential part of the equipment.

There need be no objections on the score of want of room or of expense. A separate room is not essential, though it certainly is an advantage, and as to expense, a lantern can easily be made to pay for itself by giving a few evening entertainments during the winter months. The preliminary outlay need not exceed £2, as lanterns can be purchased for 27*s.* 6*d.*, which are quite suitable for school purposes, and are fitted with incandescent burner, mantle, and chimney. A heavy, rigid tripod stand, capable of being raised and lowered, is almost a necessity, although a screen elevator can be dispensed with by using a blank wall for a sheet. An inexpensive lantern like the above gives very good results for an image 5 ft. square, which is quite large enough to be seen by a class of twenty pupils. Care is necessary to regulate the supply of gas, which affects the illuminating power of the mantle very considerably. A four-burner acetylene jet and generator, or even an acetylene bicycle lamp, may be substituted with advantage for the above. The jet must be placed at the right height and at the proper distance from the condenser, which otherwise is liable to get overheated and cracked.

It is quite unnecessary to darken the room completely if diagram slides are used, and it is always advisable to avoid exhibiting slides which require complete exclusion of light. If necessary, atlases, text-books, or note-books should be referred to as in the course of an ordinary lesson. Sufficient light can be excluded by the use of dark blinds and (where there is an excess of light) by nailing a piece of wood to the window-sash, so as to overlap the edge of the blind. All that is necessary, however, with good, home-made slides is to shade the screen well and to allow no direct light to fall upon it. Instructions for making these slides are to be found in the article on "Lantern-slides" in The School World for March, 1903. In addition to the methods described there, I have found jelly-graph ink and vitro ink (sold by Messrs. J. J. Griffin and Sons) very convenient for drawing maps and diagrams on glass.

Home-made or diagram slides possess an advantage over the ordinary view-slides, as we can by their aid emphasise just the points we are explaining. For graphical and pictorial illustration, we are no longer at the mercy of others, but are at liberty to work out our own particular views and depict exactly what we want.

The Diagram series (600 slides) has been prepared to provide the necessary material for a systematic study of geography and history. The original maps have been compiled from the most trustworthy sources, and are specially drawn for projection. With a sufficiently bright light and a slightly shaded screen they do not require a completely darkened room, which is a great consideration in the maintenance of discipline, and enables the class to take notes and make sketches as in an ordinary lesson. Important towns are indicated by dots and capital letters, which can be distinctly read by a large class; land elevation is shown by contour lines and gradations of colour carefully selected to show the most striking features of the regions studied. They contain none of the usual faults of overcrowding so common in political maps, but, on the other hand, modifications have been introduced with a view to emphasise important features. By the use of the orographical maps, the class can be led to discover deductively the trade-routes, the mountain passes, and the physical barriers to communication. The river-basin maps also provide admirable material for drawing from the pupil his own deductions from the drainage areas. The

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series on climate includes world charts of isobars and isotherms, winds, ocean-currents, and rainfall, as well as the character of the vegetation and its development in summer and winter. Besides the above, there are others dealing with economic questions, *e.g.* food-supply and raw materials, political map-slides showing railway routes and commercial centres, together with a considerable number of historical maps and diagrams.

A beautiful series of hand-maps and outline maps has been designed for the use of pupils in recording the features which have been dealt with by the teacher during the lesson. The Diagram Co. (West Barnes Lane, New Malden, Surrey) is prepared to supply the slides at *2s.* each net, or they may be hired at a very reasonable rate by applying at the end of the term before which they are required. Teachers can also obtain special maps and diagrams prepared from their own designs.

Slides which are needed constantly for class-teaching should be purchased or made, while those required for a special purpose may be hired, *e.g.* the series on loan from the Agents-General of Canada and Tasmania, which depict the industries, scenic features, and mineral resources of these colonies. To arouse an interest in contemporary history, it is well to hire a few slides occasionally to depict such events as the secession of Norway, international treaties, the formation of the Australian Commonwealth and the signing of the deed of Federation.

View-slides are more suited for use in connection with school societies than for class-work, but there is no objection to their occasional employment on centenary celebrations, or for patriotic purposes. "Empire" Day might be suitably celebrated by giving an address on the growth and development of the British colonies and dependencies, or by reading a lecture such as that by Mr. W. K. Stride, entitled "A Bird's Eye View of the Empire." A set of sixty-five slides has been issued by the League of the Empire to illustrate this lecture, and as they are divided into six sections, it would be quite practicable to show a few of the sections at a time so as to cover several lesson periods, and not interfere with the time-table.

A representative series of slides illustrating the British colonies, their products and industries, is also supplied by Messrs. Geo. Philip and Son, which assist the pupil to realise the character of the countries and their inhabitants.

For evening entertainments many will be glad to take advantage of the Free Popular Lantern Lectures issued by the S. H. Benson Lantern Bureau, 1, Tudor Street, E.C. Application for the loan of the slides has to be made some time in advance, but the only other conditions laid down are that the advertisement slides be exhibited at the end of the lecture and the slides forwarded, carriage paid, to the next exhibitor. Last winter the series included the "Life of Nelson," "Explorations in Africa and Australia," "Glimpses of the Far East," "The Story of the Ocean," and "The Indian Mutiny."

Messrs. Walter Tyler and Co., 48–50, Waterloo Road, S.E., have an enormous stock of 600,000 slides, which can be purchased, hired, or exchanged. These deal with every conceivable subject, and are made up in sets of fifty, which can be hired for *3s.*, or at the rate of *8d.* per dozen. Selections can also be made from various sets, which is a distinct advantage. The scientific sets have been specially drawn from nature, and are well adapted for school use. The geographical series is particularly full and complete, and includes such topics of the day as Moorish life and scenes, native South African races, Around about Naples, the Prince of Wales's visit to India, and the cathedrals of England and Wales. There are also 500 slides dealing with the history of England, which are arranged in sets to illustrate the different periods and dynasties.

I am aware that in the minds of many teachers there are grave objections to the use of lantern slides in school, but these arise almost invariably from the selection of unsuitable material, such as view-slides chosen more for their artistic effect than for their scientific usefulness. Under the conditions I have named, there should be no difficulty about discipline, and to allow the lesson to develop into an amusement and nothing more is a weakness on the part of the demonstrator. The lantern should be considered as the complement of the atlas or text-book, and not a substitute for them.

Some teachers may feel inclined to depend on their own picturesque descriptions of typical scenery; others condemn the tendency to pander to the craving for the pictorial; but such a natural desire on the part of the scholar should, I think, be satisfied rather than repressed. The power of vivid and graphic verbal description, too, is not given to all alike, and though I admit it may be cultivated to a moderate extent, yet no description is perfectly accurate, nor can we be certain that our words convey a clear idea to the child's mind. Indeed, it is certain that they very often do not. However that may be, the lantern is systematically used now in many schools, and its use is daily extending when it is discovered that the difficulties connected with its employment disappear with a little practice and experience.

In many parts of the country schemes have already been started to obtain a complete photographic survey of each county. By means of organised effort on the part of the pupils and the co-operation of teachers of other schools, it becomes comparatively an easy task to obtain a set of negatives to illustrate the history and geography of one's own county. Of energy there is plenty among schoolboys; it only requires guiding and training. The chief difficulty is to know what to photograph, and it should be clearly explained to them what feature you want reproduced. Landscape views are of little value, except where there are deep and narrow valleys

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or some other prominent feature included. Ample material for a commencement will be found in the Druidical remains, the Norman castles and ecclesiastical ruins, the earthen mounds and settlements of early people scattered about the country. Then the work of the sea and atmospheric agencies can be illustrated by sea-caverns, sandy bays, and pebble ridges, pot-holes and blow-holes. It is always possible to arouse a healthy interest in such subjects as land sculpture and denudation. In order to depict a particular type of scenery, *e.g.* the Lizard peninsula and its flora, one should obtain from others, if possible, views taken on holiday-travel, and then complete by reference to such works as Avebury's "Scenery of England" and Geikie's "Land Sculpture."

DYNAMIC FACTORS IN EDUCATION.[1]

IN spite of many defects of style and manner, this is a really valuable book, and one that summarises for all concerned in education some of the most important facts with which that complex science has to deal. The writer has not only read the authorities whose names he occasionally artlessly parades, but he has also digested them.

The book shows that the child is in perpetual movement, and that unless this movement is economically and skilfully directed, inevitable harm is the result. It is full of good sense and real "science." Developmental facts being admitted, the writer shows conclusively that all sorts of bad mistakes are being constantly made because our plans of instruction involve accessory nerve processes before we have trained elemental co-ordinations involving fundamental nerve centres. Or, without jargon, we make little children try to effect finicking and minute processes before we have trained them to larger and easier movements. No one, after reading this book, should teach a child to write or to sew before he can draw, or to read aloud before he can speak plainly. Few things have done so much mischief in our schools as these two last-mentioned and radical errors, with their concomitant armies of "Infant Readers" and systematic "Copy Books." The sterility of the schools is amply explained by the destructive "thoroughness" which has sowed sand over the kindergarten, with its "occupations," and in the school, with its misplaced "accuracy." Every one who watches little (or large) children must feel that the pedantic practice of analysing movements or sounds, and then making these analytical results the starting-place for the child, is a fundamental and cruel error, "a reversal of the natural order."

The author shows clearly that the stages of movement (or "motor activity"), of which education must make use, are: first, random action, then excessive activity in the effort to focalise action, then inhibition in order to control irrelevant activity, and finally the achieved end of perfect action. Here is a whole philosophy of practical education. The "manual training people" (what a phrase!), "some of them" have been grave sinners in this matter; they have followed the "logical" rather than the "psychological" order, though fault may be found with such a distinction, already sanctioned, nevertheless, by competent authority.

We do not remember to have seen in any book so good an account of the psychological purpose of imitation as we have here; for "we see and hear in terms of our motor habits"—as Berkeley taught most of us, apparently in vain.

We like the author's account of character: "Just the sum of these settled *modes of action* which are practically unalterable." Nothing but action will make character. Rightly, too, the book makes much of the theory of fatigue. The excessively minute and complicated adjustments which much of the school work known to us entails wastes an enormous amount of conservable energy and saps vitality; and yet with the growing complexity of life a greater *effectiveness* is needed by the individual. He must not have less "education"—indeed, he needs more—than his forefathers; but it must be more economically directed to its proper end.

There are good *résumés* at the end of each chapter of the book, and at the end; and questions by which the student and teacher can test the effectiveness of the instruction which preceding chapters have given. In spite of some cant and much irritating English, it is a right good book, and well worth more than one reading.

THE DEVELOPMENT OF THE GIFT OF DRAWING.[1]

THE early efforts of the budding artist of tender years to give graphic expression to his ideas have always been a matter of absorbing interest, not only to the adoring family circle, but to a much wider circle of more impartial critics. In the records of Sully, Perez, Ricci, Luckens, and others we have already the invaluable impressions and opinions, from many points of view, of highly competent observers who have devoted some attention to the artistic, educational, physical, and psychological aspects of this phase of child development.

The latest of these explorers into the phenomena which accompany the awakening and growth of the child's power of graphic expression is Dr. Georg Kerschensteiner, Superintendent of the Munich Municipal School Board, who has conducted a systematic investigation among the pupils of the schools under his charge, and has collected and examined, during the seven years over which these investigations were spread, the

[1] "Dynamic Factors in Education." By M. V. O'Shea. 320 pp. (The Macmillan Co.) 5s.

[1] "Die Entwickelung der zeichnerischen Begabung." Von Studienrat Dr. Georg Kerschensteiner. xv.+508 pp.; 247 illustrations. (München: Carl Gerber.)

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spontaneous unaided drawings of 60,000 children of all sorts and conditions, from the earliest school age upwards.

The results of this gigantic undertaking, to the number of some 500,000 drawings, he has analysed, classified, and tabulated with such a characteristically national thoroughness, according to age, sex, physical and intellectual ability, home influence, environment, and so forth, as to leave no doubt that his conclusions, if not always entirely convincing, have been by no means lightly arrived at.

Dr. Kerschensteiner has published an account of his investigations in a sumptuous volume with the title "Die Entwickelung der zeichnerischen Begabung," which takes its place at once as a most valuable contribution to our available literature on this important subject.

Premising in his preface that "the earlier investigations of other researchers on the mode, the development, and the attainable degree of the child's capability for drawing have stopped at the point where they would begin to be of practical importance for our ways of instruction," he sets forth a string of questions bearing on various vital points of the subject, as, for example, "What average work is to be expected at the different ages and with different groups of subjects? At what age does the power of mastering certain tasks appear? Is drawing from memory or from nature of greater importance to certain ages? Is there any remarkable difference of the sexes as to their gifts of drawing? What relation is there between intellect and power of graphic expression? Is the development of the power of drawing in town children the same as in country children?" &c., to which and other questions the author claims that his book gives clear and distinct answers.

Dr. Kerschensteiner has supported his arguments with a number of exhaustive analytical and comparative tables, and concludes with a valuable and serious attempt to formulate a scheme of work based upon the results of his inquiries.

A most fascinating feature of the volume is the inclusion of upwards of 800 of the children's drawings, in black and white, and 47 in colour; they are reproduced in facsimile, and thus preserve that delightful spontaneity and *naïveté* which add so much to the charm of a child's drawing. We have representative selections of all the favourite childish subjects—horses, dogs, trains, tramcars, trees, ducks, soldiers, and so on, all treated in the manner so familiar to all who have watched children draw—and we may thus trace the evolution of, say, a man, beginning at the primal type of lunar head, with wiry arms and legs, and dots and gashes for features, through all the various stages of development and elaboration so ably described in Sully's "Studies of Childhood."

It is interesting to note that Dr. Kerschensteiner joins issue with some of the authorities mentioned above on the psychological aspect of the child's drawing. Sully, for example, remarks (*ib.*, p. 334):—"The representation is arbitrarily chosen as a symbol and not as a likeness. This element of a non-imitative or symbolic mode of representation will be found to run through the whole of childish drawing." Again (p. 383):—"The child is content with a schematic treatment, which involves an appreciable and even considerable departure from truthful representation." And yet again (p. 389):—"His first drawings are thus, in a sense, playthings, which, like the battered stump of a doll, his imaginative intention corrects, supplements, and perfects."

To all this Dr. Kerschensteiner replies:—"The much-heard-of assertion, that it is the child's imagination which makes allowance for the omissions in its drawing, is a fairy-tale; it doesn't see any omissions, because it has never realised a form—because it has drawn simply according to its knowledge. The child is not a symbolist, as some of the child psychologists claim; to the child the lines do not *mean* something—they *are* something. The drawing only becomes a symbol when we are clearly conscious of the difference between the picture and the reality."

This view appears to be borne out by the fact that in nearly all drawings of children we notice in general those points only which form characteristic and distinctive features of the object represented. No child ever draws a man without a head (though it often combines head and body), or a chair without legs, or a train without wheels, or a church without a steeple; the addition to a figure of long or short hair, stick or parasol, pipe or satchel, and so forth, serves to distinguish whether a man or woman is intended. This power of characterisation soon fails, however, if the child attempts to differentiate, say, between cat and dog, hen and duck, or tree and flower, unless the difference happens to be very marked. Sully has remarked the almost universal propensity of children to make the features occupy the whole head area—which again seems to point out that the child *sees* only those parts which impress themselves on its imagination, and does not arbitrarily select them for representation. One may observe in older students commencing to draw from life the very common tendency to overrate the features in proportion to the size of the head—and *they* are not symbolists, but are striving with might and main, as "Punch's" Cockney art master puts it, "to get it something like."

Although the suggestions for schemes of work based upon these investigations will offer no considerable novelty to those familiar with the methods of some of our best elementary schools, there are yet many features which claim attention. For example, the author advocates, for lower classes, drawing of common, well-known objects, in soft pencil or chalk, *from memory first*, then corrected (by the child) from the object, and then again from memory; all construction lines and mistakes to be left in, no rubber or other eraser to be used, no mechanical helps, abstract forms and small drawings to be avoided

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—all of which is sound advice and much to be commended.

As is almost inevitable in a work of such scope and magnitude, the book contains a certain amount of commonplace and reiteration of the obvious. At the same time there is much that is highly interesting and suggestive, opening up innumerable avenues of thought and unveiling many unsuspected potentialities in the work of the youthful draughtsman.

Dr. Kerschensteiner is to be congratulated both on the original scheme of his book and on the way that it has been carried out. It is a book that should appeal, as the author ventures to hope, not only to artists, teachers of drawing, psychologists, pedagogues, art historians, and archæologists, but also to every man who takes an active interest in the important questions of the development of children.

SCIENCE TEACHING IN FRENCH SCHOOLS.[1]

THIS brochure will be of interest to those who are interested in science teaching, if only because of the consolation it affords in showing how much, after all, we, in this country, are ahead of the Continent. The author reproduces the chemistry and physics syllabus of the French higher grade schools and discusses their work in comparison with that of German schools. The French schools are divided into a preliminary school with four classes, a lower school with four classes (vi., v., iv., iii.) and an upper school of three classes (ii. and i. and upper). In the lower school, pupils are allowed to choose between divisions A and B. In the former, Latin is taught from the sixth class onwards and voluntary Greek from the fourth form; in the latter, most attention is paid to French, science and drawing. Comparison of the age of the pupils shows that they enter the upper school a year earlier in France than in Germany and a year later in France than in Austria. The number of hours devoted to science are very few and practical work is only undertaken in the three classes of the upper school.

The author then proceeds to criticise the French methods from the German point of view. What the state of science teaching actually is in German schools will be gathered when, besides admitting Marotte's criticism—"On ne sera donc pas surpris que j'aie trouvé, même dans de très grandes villes, des établissements considérables et fort réputés, où les salles de classe, les laboratoires et les collections sont fort insuffisantes"—he urges the necessity that a simple workshop should be provided in every school together with a certain amount of apparatus. He also pleads for at least one and a half to two hours at a time being devoted to science.

The evil effect of impending examinations both in France and in Germany on physics teaching is alluded to, tending, as it does, to the overburdening of the pupil with facts which are subsequently rapidly forgotten. The abolition of the examination in physics in Germany is advocated. Subsequently, the author takes the view that physics should be taught in the form of selected problems, so that physical facts may be presented in logical sequence to the pupil and time afforded him to digest them and accustom himself to new conceptions. "Solche Problem-Anordnungen sind erst noch zu schaffen. Hier liegen die grossen Aufgaben des physikalischen Unterrichts der Zukunft." Does this mark the dawn of the heuristic method in Germany?

After spending four years at a German university the writer has been forced to the conclusion that the merits of the German school system are grossly exaggerated. The system is one which tends to destroy all individuality and it is difficult to resist the impression that the pupils have been taught in a purely mechanical manner, sense of proportion and judgment being rarely met with.

[1] Syllabus of the Physical and Chemical Teaching in the Higher Schools of France. (Wissenschaftliche Beilage zum Jahresbericht des dorotheenstädtischen Realgymnasiums.) Herman Hahn.

DOMESTIC ECONOMY AS PART OF THE SCHOOL CURRICULUM.[1]

I.

By E. M. LEAHY,
Headmistress of the Croydon High School for Girls.

DURING the past two years an experiment in domestic science training has been carried out in certain of the High Schools belonging to the Girls' Public Day School Trust. The details of organisation and curriculum have varied in the different schools, but the main purpose in each has been to provide a systematic and thorough course of training in domestic science for girls whose ordinary school course is finished. This is the essential idea of the scheme, for those headmistresses who have adopted it are of opinion that the greatest permanent benefit can be gained by their girls from a course of training when the ordinary school career is over. The sound general education which the girls have received up to the age of seventeen, eighteen, or nineteen has prepared them to work with intelligence and accuracy, and the special benefit of the training received in science and handwork is evident when neatness, precision, and quickness are required, as in cookery and practical household work.

In my own school the scheme of work is arranged for a year, with a possible continuation course of a more advanced character for students who have taken the first-year course. The age at which a girl begins the course varies with her position in the school. We have had girls of nineteen and eighteen taking the training after gaining the Joint Board Higher Certificate in the Lower Sixth form. We have had several old girls who have returned to take the whole or part of the course. We have also had girls of seventeen who have come from the Upper Fifth, Lower Fifth, or Fourth Remove forms. No girl is allowed to take the course until she is at least seventeen, for we could not allow her ordinary school education to cease before that age. The result of this rule has been beneficial both to the school and to the

[1] Being papers read at the Annual Conference of the Association of Headmistresses, June, 1906.

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girls. Several girls who would have left the school at the age of seventeen or earlier, on account of inability to do the work of the higher forms, have been encouraged to stay on for the year from seventeen to eighteen as domestic science students. It has been observed that some of these girls have done remarkably well in practical cookery and dressmaking, though in the theoretical work they cannot reach the level of the girl who begins her work after a year or more in the Sixth Form.

Our curriculum has been planned to provide definite training for home life. It therefore includes the essential subjects of which the mistress of a house must have some knowledge—knowledge which is, of course, equally valuable for the woman who takes her share in public life. The doctors, nurses, members of Boards of Guardians, district visitors, school managers, the head- and assistant-mistresses of the future, will be more valuable members of the community if they are equipped with the practical skill and knowledge the lack of which, perhaps, some of us have felt. The girl who is going to college is, as a rule, unable to get this training during her school days. It is to be hoped that she will take it later on. We have had one old girl who has come to cookery classes after taking the Classical Tripos at Newnham.

The classes are all held in the mornings, with the exception of the first-aid and home-nursing lectures. They are held in our preparatory-school house, which provides a needlework room, a good kitchen, and domestic offices. A domestic science mistress, who was trained at Battersea Polytechnic, is in charge of the work of the students. She teaches cookery, household management, needlework, dressmaking, laundry-work, and millinery. Hygiene lessons are given by the school science mistress. Lectures on first-aid to the injured, home nursing, and care of young children are given by a lady doctor, who is one of the lecturers authorised by the St. John Ambulance Society. The students who take the full course attend from 9.15 to 1 every morning. The others come at the hours of their various classes. On certain mornings of the week optional classes are arranged during the first hour for French and German conversation and English literature. Some of the students also keep up their drawing and painting by joining one of the Upper School divisions on one morning in the week.

A cookery demonstration class is given once a week, and every student does practical cookery twice a week. The syllabus followed includes considerably more than that required for the examination in plain cookery held by the City and Guilds Institute. Most of our students of last year passed this examination. The work in cookery is thoroughly practical; for example, cleaning of saucepans and utensils is done by the students themselves, and no elaborate or expensive apparatus is used. Needlework includes cutting out and making garments, patching, darning, and mending garments and household linen. Parallel with this is a course of dressmaking.

Household management is a comprehensive term, including cleaning of silver, washing and care of china and glass, general management and cleaning of a house, simple upholstery, and some instruction in keeping accounts, management of money, cheques, &c.

The laundry-work taught is that of washing and getting up lace, muslins, and finer articles of clothing. In the summer term this is not taken, and a course of millinery lessons takes its place. Also in the summer term it is found advisable to have less time given to practical cookery. Last year a short course of lectures on gardening (with practical work) was arranged for our students. Examinations are optional. The majority of the students gain the certificates of the St. John Ambulance Society for first-aid and home nursing, the City and Guilds of London Institute cookery certificate, and the Board of Education certificate for elementary hygiene. Much interest has been taken in the work by the girls, their parents, and the mistresses on the school staff. The result of our two years' experiment has so far been encouraging, and we hope to be able to continue this course of training as a very valuable addition to the work of the school.

II.

By Frances R. Gray,
Headmistress, St. Paul's Girls' School, Brook Green, W.

In arranging this part of the work at St. Paul's Girls' School, I received some valuable suggestions during visits to other schools, particularly from King Edward's High School at Birmingham and one of the Écoles Menagères in Brussels. A special report on Belgian teaching of domestic economy has been written for the Board of Education by Miss Helen Matheson, and will be found useful to anyone who desires to organise such teaching. In a secondary school it is, of course, necessary to adapt the teaching of domestic economy to very different conditions from those which obtain among elementary-school children.

The cookery lessons which I am asked to describe are a regular part of the work of Forms IV. and Lower V. Thus a girl who enters the school at the age of thirteen will have two years of cookery lessons. These lessons are given at an age when girls need a good deal of change of work, and when they demand plenty of physical activity. After Lower V. Form age (fourteen to fifteen), cookery becomes an optional subject.

Each lesson lasts one hour. This does not enable the girls to see the beginning and end of every particular dish at which they work. But they see the same kind of dish in various stages on different days. For example, on one day two girls will prepare a sirloin of beef for roasting; on another they baste a similar joint; on a third they make the appropriate gravy. Or they prepare bones for soup on one day, and on another skim the stock-pot. Each division consists of not more than sixteen girls, working in pairs. During the first year they learn to make various meat and vegetable soups, to treat vegetables and meat in all ordinary ways, and to make a good many puddings. During the second year they go over the same ground, with a little more elaboration. One term at least is given to invalid cookery. All that is made at the lessons is eaten at the school dinner. This helps to make the work practical.

The equipment is as simple as possible. The girls' kitchen is like a home kitchen, and the girls are required to accommodate each other and to encounter some of the difficulties they would have to conquer in preparing a meal at home. One small range and a gas-stove are sufficient for a division, though the lesson is frequently given in the larger kitchen, where the dinner for a hundred persons is being cooked. Plenty of utensils I regard as necessary, because I do not expect each girl to clean each pot or pan as she uses it; she is taught how to clean everything in the kitchen, but it would be a waste of her time to allow her to do it every day. The object of the teacher is not to give great manual dexterity in kitchen work, but to imprint on the minds of the girls the best methods of working.

Practical lessons are given in the cleaning of all kinds of metal in domestic use, china, glass, and wood. The

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scrubbing of the kitchen table is always much enjoyed. During the course a few lessons in the elements of laundry work are given, especially in the washing of the flannel blouses, which the girls cut out and make for themselves.

Note.—In reply to a question on the educational value of this work to girls of this age, Miss Gray said that in organising it she had not before her mind its value as mental gymnastic, although the training of hand and eye had a value of its own, but the desirability of implanting and fostering a taste for domestic pursuits at an early age. She wished to guard against the tendency among schoolgirls to grow up ignorant of the duties and the difficulties of home life.

SOME GEOGRAPHICAL APPARATUS.[1]

By G. McCROBEN,
Headmistress of the Girls' High School, Wakefield.

IN the preface to Pinkerton's Atlas of 1815, the enthusiastic writer says:—

"Geography is a study so universally instructive and pleasing, that it has for nearly a century been taught, even to females, whose pursuits are foreign from serious researches. In the trivial conversation of the social circle, in the daily avidity of the occurrences of the times, pregnant indeed above all others with rapid and important changes that affect the very existence of States and Empires, geography has become an habitual resource to the elegant female as well as the profound philosopher."

FIG. 1.—The Geography Garden, Wakefield High School for Girls.

This may be true for the "elegant female," but until lately it can hardly be said that geography was so popular a study with the average schoolgirl. At present, however, with our change in views on teaching geography and abundance of apparatus, the subject is certainly a more popular one.

In this short paper I shall not discuss any syllabus or scheme of work, but shall only describe two kinds of experimental apparatus, the stereoscope and the geography garden. These are used to obviate two great difficulties which children have to face in learning geography, viz.: (1) the difficulty of realising places and countries never visited; (2) the difficulty of understanding a map. To anyone who has travelled, a map is a very interesting and suggestive thing. It is an "arch where through gleams that untravelled world"—but to anyone who has not travelled it is apt to be rather a dull affair. Take the map of Switzerland, for instance. To anyone who has been there it calls up a delightful vision of snow-covered mountains and glaciers. But to the average child a glacier is pictured as a "river of ice" gliding smoothly down between the mountains, with moraines neatly arranged upon it. Lantern-slides and photographs help to dispel the illusion and give a truer picture, but they lack relief. Stereoscopes, which show the photographs in relief, are very much better, and really help to create a mental picture by putting the child in the position of the traveller. In looking at a stereograph of a glacier, for instance, the child seems to be actually on the ice, and obtains a truer conception of the roughness and inequality of the ice-falls and surface than can be obtained from mere description or even from photographs and slides. In using this apparatus, each child in the room should be provided with a stereoscope, and all should be looking at the same stereograph. The children are then in a position to describe what they see, instead of listening to a description given by the teacher.

I find it a good plan to have a room in which all geography lessons are given, in order to obviate the difficulty of carrying apparatus from one room to another. The walls are hung with relief maps, with a map of the world to correct the sense of proportion, as these relief maps are made on different scales. There is a lantern lighted by incandescent gas, so that it is only the work of a few moments to draw the curtains, light the lantern, and look at a slide which illustrates any particular point. There are also stereoscopes and stereographs, a slate globe, a large compass, and an orrery.

The second great difficulty which children have to face is that of understanding a map. In the syllabus issued by the Royal Geographical Society in 1903, this point is dwelt upon:—"It is a serious difficulty in geography that the mind has to deal with facts that cannot be directly observed. The relation of places hundreds of miles apart, and separated by surfaces of very diverse character, have to be grasped in a single mental observation, but the observations by which these relations have been determined can be made only piecemeal. Hence arises the necessity for representing on a map the facts of nature, which are the real subject of study. It is very important, therefore, that the learner should be brought to realise two things: first, that geography is actually based on the observation of nature; and, second, how the map is connected with such observations, and may be made to stand for an extent of ground that no individual can directly observe."

In the geographical exhibition of relief maps, &c., of that year, there was a small relief model, about ¾ yard square, intended to show in that small space a water-

[1] A paper read at the Annual Conference of the Association of Headmistresses, June, 1906.

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shed, river-basin, delta, harbour, and volcano. The idea seemed good, but the model too small; it occurred to me that one on a larger scale might be of use, especially if the mountains were made of real rock and soil and the river of real water. As a result, I had a model of this kind made in the school garden on a piece of ground 25 ft. by 18 ft., with mountains from 4 ft. to 5 ft. high. The water for the rivers is carried through hose-pipes to the tops of the mountains, and the children can see the river and its tributaries winding down to the valley, and gradually broadening until they empty themselves into the grating that is supposed to be the sea. It is on a sufficiently large scale to be very real to small children, and one remembers how large anything one's own height used to seem. They get more idea of the meaning of such terms as water-shed, river-bed, mountain-range, peak and valley, than from mere description or even from photographs, and they see before them practical illustrations of source, mouth, right and left bank, bed, basin, and even delta. It is, in fact, a school journey on a small scale.

From this model, also, they learn by practical experience how maps are made, and this forms a part of the practical geometry. Two sticks or umbrellas form the ends of the base-line. Large home-made protractors, with hat-pins as pointers, are used to calculate the angles between the direction of the peaks and the base-line, and so maps and plasticene models of the mountain-ranges are made. The tops of the mountains can be made white with lime to mark the snow-level; glaciers can also be made.

FIG. 2.—The Geography Garden, Wakefield High School for Girls.

Again, there is other practical work done in the garden. The girls lay a miniature railway-line each year; they first level the track with the aid of a spirit-level, then cut the sleepers, and lay the lines with their fish-plates and chairs, taking care to keep them even and parallel; where necessary, they build bridges or cut tunnels for the passage of the line. At the end of the summer the line is taken up, ready to be re-laid by a fresh set of girls next year. The first year it ran through a deep cutting and tunnels; the second year along a high embankment and over bridges. The railway is completed by making stations, signals and signal-boxes, telegraph poles and wires, and level crossings.

All this gives training in mathematical accuracy, and affords an opportunity for hand-work in lessons, as well as developing the powers of observation. I have found the train-girls much more observant on their daily journeys. Each year, also, the physical features are somewhat changed. For instance, last year, in order to facilitate communication between the river and the main tributary, a channel was made connecting the two, and as they were on different levels this necessitated the construction of a lock.

All this work is, of course, mainly for the younger children; but every form in the school builds a town or dwelling-place of some kind during the summer term. This makes the girls read more books of travel, and look at pictures, in order to find out as much as possible about the place they have chosen. The girls use their ingenuity to construct the houses of material which will stand the weather. One form chose Venice, and built a few palaces standing on the banks of some rather muddy canals. Another made a South African ostrich farm; a family of Europeans owned the farm, and lived in a little house with a verandah, surrounded by the huts of the Kaffir servants who were in charge of the ostriches, and a bullock wagon was to be seen fording the river.

Another represented an encampment in an oasis, with a pyramid and the Sphinx seen in the distance. Swiss châlets were placed on the higher pastures, with climbers starting on expeditions to the mountains. Others chose Japanese houses and temples, an Indian village, an English village with its maypole and ivy-covered inn, a Dutch village, a manufacturing town, a Malay village; and the second form built their own town of Wakefield, and made the high school dwarf all the other houses. In fact, there is endless scope for ingenuity and for the representation of other kinds of life than our own.

This geography garden has helped the children in the realisation of the meaning of physical terms and in the understanding of a map; it has trained them in accuracy and developed their powers of observation, and given more opportunity for work in which the mind directs the hand; and lastly, it has given more interest in geography, and has been a stimulus to read more books about other countries and books of travel.

A Nature Reader for Senior Students. Edited by Sir John Cockburn and E. E. Speight. 1–334 pp. (Hodder and Stoughton.) 2*s.* net.—This is an altogether delightful production, and is one of the best results of the renaissance of education to which the editors aptly refer in their introduction. The whole book is real, and leads the reader to literature itself. The only caution necessary is that the teacher should not read his delight in nature into the minds of his class: their delight is of another kind, and must be allowed to grow. The illustrations are from well-known pictures.

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THE TEACHING OF ELEMENTARY ARITHMETIC.[1]

RECENT MOVEMENTS.

SINCE the report of a committee on the teaching of elementary mathematics was presented to the Belfast meeting of the British Association in 1902, decided changes have taken place in the nature and purpose of mathematical teaching in schools. The appointment of that committee was the outcome of a discussion on the teaching of elementary mathematics opened by Prof. J. Perry, F.R.S., at the Glasgow meeting of the Association in 1901; and the attention thus directed to the need for reform led to the formation of similar committees by representative bodies of teachers and others interested in the improvement of mathematical teaching. Reports in which the general views expressed by the British Association Committee received support were prepared by committees of the Mathematical Association and the Incorporated Association of Assistant-Masters. A syndicate appointed by the University of Cambridge in December, 1902, drew up schedules of propositions in demonstrative geometry and of constructions in practical geometry suitable for the course of theorems proposed; and the whole or parts of these schedules have been adopted as the basis of requirements in geometry for the Previous Examination at Cambridge, Responsions at Oxford, and the Local Examinations connected with these two universities. Other examinations which have been modified so as to found geometrical teaching upon experimental work with the use of instruments, and numerical measurements and calculations, are those of the London Matriculation, Army and Navy Entrance, and the Civil Service; with the result that in most secondary schools, not only in this country, but also in India and the Colonies, the work in elementary geometry has altered greatly, though it must be admitted that in actual practice reform has not gone far in the average school.

The recent improvements in the character of school geometry have been shared by other mathematical subjects, such as arithmetic, algebra, and trigonometry, to the advantage of them all. It is recognised that the work of accurate drawing and measuring, with numerical calculations, is far better adapted to the intelligence of pupils in schools, even when its practical value is left out of consideration, than a rigid system of deductive geometry. In good schools, geometry and trigonometry have indeed become in their earlier stages largely arithmetical, while algebra is introduced as generalised arithmetic; and there is good ground for the belief that this rational and co-ordinated treatment of school mathematics will be generally adopted in the course of a few years.

The views expressed by the committees of the British and Mathematical Associations as to desirable improvements in the teaching of arithmetic are subjoined, and also the recommendations relating to this subject contained in a report recently presented by a committee of the Institution of Civil Engineers. From these extracts it will be seen that there is a consensus of opinion among men of science, mathematical masters, and engineers as to the fundamental importance of practical work, the need for simplification, the use of contracted methods and of logarithms in numerical calculations, and the omission of those parts of the subject which have no relation to the common experiences of life.

RECOMMENDATIONS OF BRITISH ASSOCIATION COMMITTEE.[1]

In regard to arithmetic, the committee desire to point out, what has been pointed out so often before, that, if the decimal system of weights and measures were adopted in this country, a vast amount of what is now the subject-matter of teaching and of examination could be omitted as being then useless for any purpose. The economy in time, and the advantage in point of simplification, would be of the greatest importance. But such a change does not seem likely to be adopted at present; and the committee confine themselves to making certain suggestions affecting the present practice. They desire, however, to urge that teachers and examiners alike should deal with only those tables of weights and measures which are the simplest and of most frequent practical use.

In formal arithmetic, the elaborate manipulation of vulgar fractions should be avoided, both in teaching and in examinations; too many of the questions that appear in examination papers are tests rather of mechanical facility than of clear thinking or of knowledge. The ideas of ratio and proportion should be developed concurrently with the use of vulgar fractions. Decimals should be introduced at an early stage, soon after the notion of fractions has been grasped. Methods of calculation, accurate only to specified significant figures, and, in particular, the practice of contracted methods, should be encouraged. The use of tables of simple functions should be begun as soon as the student is capable of understanding the general nature of the functions tabulated; for example, the use of logarithms in numerical calculation may be begun as soon as the fundamental law of indices is known.

RECOMMENDATIONS OF MATHEMATICAL ASSOCIATION COMMITTEE.[2]

(1) The committee consider that there is considerable danger of the true educational value of Arithmetic and Algebra being seriously impaired by reason of a tendency to sacrifice clear understanding to mere mechanical skill.

(2) In view of this the committee recommend:

(*a*) that *easy viva voce* examples should be frequently used in both Arithmetic and Algebra;

(*b*) that great stress should be laid on fundamental principles;

(*c*) that, as far as possible, the rules which a pupil uses should be generalisations from his own experience;

(*d*) that, whenever practicable, geometry should be employed to illustrate Arithmetic and Algebra, and in particular, that graphs should be used extensively;

(*e*) that many of the harder rules and heavier types of examples, which examinations alone compel us to retain in a school curriculum, should be postponed.

With these as guiding principles the committee are led to make the following suggestions:—

Arithmetic.

(3) That, as a preparation for contracted multiplication, pupils should, in multiplying, from the very first be taught to begin with the highest digit of the multiplier.

(4) That first principles should be carefully taught before vulgar fractions are begun, special stress being laid on factors with index notation and the use of the signs +, −, ×, ÷, and of brackets.

(5) That, as far as possible, prime factors should be used in finding H.C.F., L.C.M., and square and cube roots.

[1] From the Report of a Committee of the British Association (Section L, Educational Science), presented at the York meeting of the Association, August 1-8. The Report was drawn up by a sub-committee (secretary, Prof. R. A. Gregory) of the following committee appointed "To report upon the Course of Experimental, Observational, and Practical Studies most suitable for Elementary Schools": Sir Philip Magnus (chairman), Mr. W. M. Heller (secretary), Sir W. de W. Abney, Mr. R. H. Adie, Prof. H. E. Armstrong, Miss A. J. Cooper, Miss L. J. Clarke, Mr. George Fletcher, Prof. R. A. Gregory, Principal Griffiths, Mr. A. D. Hall, Dr. A. J. Herbertson, Dr. C. W. Kimmins, Prof. J. Perry, Mrs. W. N. Shaw, Prof. A. Smithells, Dr. Lloyd Snape, Principal Reichel, Mr. Hugh Richardson, Mr. Harold Wager, Miss Edna Walter and Prof. W. W. Watts.

[1] Extract from the Report of a Committee of the British Association on the Teaching of Elementary Mathematics. (Report of the Belfast Meeting, 1902. p. 473.)

[2] Extract from the Report of a Committee of the Mathematical Association on the Teaching of Arithmetic and Algebra. (*Mathematical Gazette* July, 1902.)

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(6) That much time should not be spent in teaching complicated vulgar fractions.

(7) That, in order to facilitate the teaching of decimals, a scale divided decimally (both in inches and centimetres) should be used for the actual measurement of lines; the scale should be subsequently used in the determination of areas and volumes.

(8) That in teaching decimals, concrete examples should be taken from the metric system.

(9) That approximate work with decimals should be introduced early and that recurring decimals should be treated in this way, the theory of recurring decimals being postponed to a later stage.

(10) That the rule for cube root should be omitted.

(11) That those parts only of the English tables of weights and measures which are in general use should be taught; and that long questions in reduction (*e.g.* square miles to square inches) should be avoided.

(12) That in money sums the system of decimalising money at sight should be largely used and that answers should, as a rule, not be required beyond the nearest penny.

(13) That, in pass examinations in Arithmetic, the use of algebraic symbols should not be prohibited.

(14) That rough checks should be constantly employed in arithmetical work.

(15) That in many cases a rough estimate might usefully *precede* the detailed work of an arithmetical computation.

(16) The committee consider that the mental training afforded by Arithmetic is largely impaired by the existing tendency of text-books to classify problems and to establish each type as a separate rule.

Report of Committee of Institution of Civil Engineers.

The Committee of the Institution of Civil Engineers issued a schedule of questions to 120 representatives of (*a*) teachers in engineering colleges; (*b*) headmasters in secondary schools at which it was believed special attention was paid to scientific training; and (*c*) engineers not engaged in teaching. The following questions were submitted in mathematics, and the percentage of replies in favour or against is shown for each.

Is it desirable that the teaching of Mathematics at School should be arranged with a view to attain all or any of the following objects?—

(1) The practical use of arithmetic with the special object of obtaining correct results independently of the mere study of arithmetical methods. (Yes, 81; No, 19.)

(2) The encouragement of the use of contracted methods. (Yes, 91; No, 9.)

(3) The encouragement of exercises in mental arithmetic. (Yes, 94; No, 6.)

(4) The teaching, at this stage, of what Prof. Perry has called "Practical Mathematics," of the use of Logarithms, of Elementary Trigonometry (limited, for example, to right-angled triangles), of the general ideas of Projective Geometry, including points and lines at infinity, and the use of the slide-rule. (Yes, 85; No, 10; Omit slide-rule, 5.)

(5) The elimination from instruction in Mathematics of such matters as Cube Root Extraction and elaborate Algebraic Equations, which are purely intellectual gymnastics without any direct usefulness. (Yes, 90; No, 10.)

The result of this inquiry led the Committee to make the following recommendations:—

Instruction in mathematics should be given by methods differing considerably from those usually adopted in the teaching of this subject merely as an intellectual exercise. The geometrical side of mathematics should be fostered, and before they leave school boys should be conversant with the use of logarithms, and with at least the elements of trigonometry, including the solution of triangles. It is also of importance that instruction in practical arithmetic should be carried further than has been generally the case hitherto, with the object especially of encouraging the use of contracted methods and operations in mental arithmetic; and of encouraging also the expression of results with only such a degree of (numerical) precision as is consistent with the known degree of certainty of the data on which they are or may be supposed to be based.[1]

Views of the Board of Education.

Evidence is not wanting that some educational authorities and examining bodies desire to encourage the rational and practical methods of teaching arithmetic in schools proposed in the foregoing extracts. The "Notes for Teachers" issued by the Commissioners for National Education in Ireland contain valuable hints on the rational teaching of arithmetic, and the Scotch Education Department has adopted the new methods as the basis of work for the Leaving Certificate examination. The latest instance of this tendency is afforded by a Blue-book (Cd. 2638, price 8*d.*) prepared by the Board of Education in 1905, and containing "Suggestions for the Consideration of Teachers and others concerned in the Work of Public Elementary Schools." This publication includes a chapter on the teaching of arithmetic and three suggestive schemes of work for the various years of primary-school instruction. In the first of these schemes, addition and subtraction are applied to compound rules (money) before multiplication and division are taught; in the second all the four simple rules are taught to begin with; and the third scheme is based upon number as a means of measurement, whole numbers being taken first, while common and decimal fractions are afterwards introduced as successive refinements of a precise system of measurement. Though these schemes differ in detail as to the method of approaching the elementary processes of arithmetic, they have all been designed with the object of giving children clear ideas about number, a practical acquaintance with simple measurements, and confidence in the application of arithmetical operations to problems of everyday life.

A course of work conceived in the spirit of these "Suggestions" would meet with the approval of most advocates of reform in the teaching of arithmetic in elementary schools. What is now required is that the principles described in the Blue-book should be raised from the plane of pious opinion to that of actual practice. It is not sufficient for the Board of Education or any other body exercising control over the work of elementary schools to point out desirable methods of teaching arithmetic when it is well known that in most schools no change will be made until it is insisted upon as essential to efficiency.

It is undesirable to give here a detailed syllabus of a school course in arithmetic but a useful purpose may be served by pointing out some existing defects and indicating directions in which improvements are required. Experienced teachers know the intellectual capacities of children and many of them follow methods of instruction which leave little to be desired. In general, however, arithmetic is not made a practical study but a miscellany of processes of doubtful origin and utility. To indicate some of the furbelows which may be usefully discarded and to encourage the adoption of a more reasonable treatment of the subject is the chief object of this report.

Fundamental Principles.

So far as possible, all reasoning in arithmetic should be from the concrete to the abstract. Pupils should not be drilled in applying rules they do not understand, but should

[1] Extract from the Report of a Committee of the Institution of Civil Engineers on the Education and Training of Engineers (April, 1906).

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learn by the manipulation of objects, paper-folding, the measurement of lines or consideration of other concrete instances, what is meant by simple arithmetical processes, and then be led to arrive at generalisations expressing in abstract form what they have found to be true in the concrete. In other words, the rules should represent results of experience instead of being academic statements of the order or method in which arithmetical operations should be performed. Excessive precision in the manipulation of large numbers, or rapidity of working, should not be considered more important than the development of reasoning powers encouraged by dealing with things instead of words.

The practice of teaching arithmetic as a collection of devices under different headings from which a choice has to be made for the solution of any particular problem cannot be too strongly condemned. Every teacher is familiar with the pupils who want to know whether they should multiply or divide one number by another in a given sum in order to obtain the correct answer; when this state of things exists it is evident that the calculations are meaningless. When the first four rules are grasped and the meaning of a simple fraction is understood, as the result of familiarity with the subdivisions of a penny or an inch, decimals may be profitably introduced by measurement; ratio then presents no difficulty, and proportion is merely the equality of two ratios. No other rules are required in simple arithmetic; in particular the "rule of three" should be avoided, as an obstacle to clear thinking and an offence against the common sense of a child.

METHODS OF APPROACH.

Attention should be given to local value of digits at the commencement of the use of numbers as symbols. In teaching local value, use should be made of bundles of small sticks in tens, pigeon-holes with separate compartments for bricks or other things representing units, tens, and hundreds, or separate rods upon which nine or ten beads can be placed, but no more. When the principle is understood, the expression of it by figures in different columns should be taught but not before. Subtraction can be taught at the same time as addition by treating it as complementary addition. In performing simple multiplication, it is doubtful whether children at the beginning should be taught to multiply first by the left-hand or highest digit of the multiplier instead of following the usual method. The ordinary process appears to be simpler for young children to understand, and it follows naturally from short multiplication. Pupils who learn contracted multiplication will do so later when the change from multiplying first by the right-hand digit to the left-hand digit of the multiplier will present little difficulty.

After acquiring familiarity with the processes of short and long division, bright children may with advantage use the Italian or compendious method of working long division, by which remainders only are written down, these being found by complementary addition. The study of formal vulgar fractions should not be commenced until work has been done with decimals; and there should be no sums involving fractions until clear ideas as to their meaning have been obtained from concrete examples and measurements. By the time children begin written work with fractions, they should be so familiar with the subdivisions of inch and centimetre scales that rules for the addition, subtraction, multiplication, and division of fractions can be readily comprehended. With squared paper divided into tenths, it is easy to show graphically the products of such numbers as $2 \times 3\frac{1}{2}$ or $3\frac{1}{2} \times 2\frac{1}{2}$; while by similar graphic exercises pupils will readily see the absurdity of adding mixed numbers by converting them into fractions, and understand that the product of two proper fractions is numerically less than either. The great advantage of work of this kind is that it enables the pupils to visualise simple principles.

PRACTICAL WORK ESSENTIAL.

Familiarity with the use of a rule divided into inches and tenths, or centimetres and millimetres, enables pupils to acquire a sound knowledge of decimals unconsciously; and at the same time they learn the significance of place value. Work of this kind can be introduced quite early without any difficulty. There is no need for any elaborate explanation of units and subdivisions if pupils are given sufficient opportunity for practical work with decimal scales and squared paper divided into tenths; while the difficulty as to the place of the decimal point in later calculations disappears, because clear ideas have been obtained of its meaning by numerous measurements. When percentages are reached, they may be usefully considered as decimal quantities as well as common fractions. It should be remembered that our monetary system admits of convenient decimal treatment; for, expressed as decimals of £1, we have $2s. = 0{\cdot}1$; $1s. = 0{\cdot}05$; $6d. = 0{\cdot}025$; and $1d. = 0{\cdot}004$ (or 0·0042). With a little practice, therefore, it is easy to decimalise money at sight.

Measurements of lines, areas and volumes may be introduced much earlier than usual. Sets of hard-wood models can be obtained at a low cost and should be put in the hands of the pupils to examine, measure and sketch, the measurements being expressed in decimals. By work of this kind arithmetic may be correlated with scale-drawing, geometry and the use of symbols in formulæ.

CONCRETE EXPERIENCE SHOULD PRECEDE CALCULATION.

Too much attention is usually devoted to currency calculations or money sums, while decimals, measuring and weighing, and work with realistic devices which teach the principles of arithmetic, are neglected. Children should not be troubled with any computations of this kind until they have fingered boxes of imitation coins and have clear ideas of the value of the tokens of commerce in buying and selling. When they are familiar with the relative values of coins and are able to answer simple questions orally, it is time enough to introduce work to be done on paper. If this plan is followed there will be fewer instances of children working sums involving amounts up to, say, £100, while they do not know what change to expect if they spend $3\frac{1}{2}d.$ out of $1s.$

Tables of money, like tables of length, capacity or weight, should be based upon actual work and sense-observations, even if they have to be committed to memory afterward. A working knowledge of our common weights and measures may be thus obtained; and the many tables which cannot be dealt with in this way ought not to be considered in the work of elementary schools. Tables and sums relating to Troy Weight, Apothecaries' Weight, Dry or Corn Measure, and Apothecaries' Fluid Measure might therefore well be dispensed with and the time thus saved be given to work of which the pupil understands the significance. The cardinal principle in the teaching should be that the pupils are practically acquainted with all the weights and measures involved in their calculations, for without this knowledge or experience the work in arithmetic becomes merely a matter of mental gymnastics.

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Value of Mental Exercises.

In class-work there should be plenty of oral exercises and practice in mental arithmetic, in order to cultivate quickness and intelligence. It is a good plan to make pupils arrive at rough answers to problems mentally before working out a calculation in detail, for in this way they are less liable to be content with absurd answers. Until rough mental results can be arrived at, it is of little use to proceed with exact calculations. Moreover, in actual life approximate values quickly obtained from given numbers are constantly required.

Co-ordination with Experimental Work.

The co-ordination of arithmetic with any work in elementary experimental science carried on in schools is very desirable. Simple experiments in mechanics, physics and chemistry provide results that afford valuable practice in working with numbers to which pupils can attach definite meanings; and calculations of this kind have the advantage of giving confidence in the applications of arithmetic to problems of everyday life. The arithmetical work thus becomes part of a student's mental machinery, instead of being regarded as a set of disconnected rules leading to results which have no real meaning outsjde the classroom. In the upper classes, measurements and quantitative work in elementary science should provide a large part of the material for arithmetical exercises. The work may deal with such subjects as averages, strengths of mixtures, velocity, conversion of thermometer scales, approximation, specific gravities; many examples should be given of the application of graphical methods.

Graphs and Tables.

In working out arithmetical results of simple experimental work in science, and in solving problems, particular attention should be paid to (1) the limits of accuracy and (2) the shortest method of arriving at a correct result. Expressed in another way, pupils should understand the degree of approximation of the data supplied, and should employ the best tools available for working out a solution. Where squared paper provides the quickest or easiest means of getting a result of sufficient accuracy, it should be adopted; but there is little advantage in using this graphic method in cases where the computation can be done more satisfactorily by simple arithmetic. Frequent comparison of results obtained by graphs and by calculation will soon show the degree of approximation that can be reached on squared paper, and will indicate that in many problems graphic methods are the best to employ. It should also be remembered that, even though arithmetical operations may give a result more quickly than graphs, the advantage of the graphic method is that it provides an illustration of a principle or relationship which is more easily remembered than a set of numbers.

Arithmetic with Tables.

Advantage should be taken of numerical tables such as are used by men in the office or workshop. Tables of shillings and pence as decimals of £1, tables of compound interest, squares, cubes, square root and cube root, reciprocals and other values in common use by practical men can be consulted as labour-saving devices. Tables of logarithms might also be used, as they are not so difficult to understand as much of the abstract work at present done in schools.

Co-ordination with Geometry and Algebra.

Whatever geometry admits of arithmetical exercises or illustrations should be introduced where it is of use. Even if formal geometry and algebra are not taught in elementary schools, there is no reason why they should not be used as linear and generalised arithmetic respectively where the circumstances of the school and staff are favourable. This has been done in some schools, and from the work that has been submitted to us it is evident that success has been achieved.

Algebra as generalised or shorthand arithmetic should be introduced when the use of algebraic symbols in expressing relationships briefly or simplifying problems is appreciated. Pupils will soon learn to write algebraic expressions of arithmetical rules or relationships, and when they understand clearly the nature of a formula, and the principle of proportion as the equality of two ratios, they are in a position to make intelligent use of the simple formulæ and tables relating to mensuration, physics, chemistry and engineering to be found in pocket-books used by practical men. They will be far better employed in the evaluation of selected formulæ, using tabulated data from such works, than in continually working at tiresome frivolities of currency. In actual business boys are not likely to be concerned much with calculations involving interest, discount or other elaborate commercial calculations, and it is much more desirable to give them a practical and sensible knowledge of the principles and tools of arithmetic than to drill them in the use of rules which they will rarely have an opportunity of applying in their daily work. If a boy has been taught arithmetic by scientific methods, and not as a collection of artifices, he will have little difficulty in responding to the demands made upon him when he leaves school, whether he enter the office or the workshop.

The following recommendations may be considered as supplementary to those made by the British and Mathematical Associations, and reprinted earlier in this report.

Recommendations.

(1) It is essential that a knowledge of arithmetic should be based upon exercises involving the manipulation and measurement of actual objects. At every stage practical work performed by pupils individually should be considered as of far greater importance than complexity of calculation.

(2) Great attention should be given to fundamental principles, and any rules required should be generalisations from work done by the pupils. No written calculations should be required until pupils are able to give mental or approximate answers to the sums set. Frequent oral exercises are therefore necessary.

(3) Complicated calculations presenting purely artificial difficulties should be avoided. There should be a general simplification of the rules and exercises usually included in school arithmetic, and more work with small numbers to illustrate arithmetical principles. Less attention should be given to currency calculations and more to the study of arithmetic experimentally in order that pupils may learn by their own experience and acquire intelligent ideas of dimensions by realistic work and measurement of shapes and sizes.

(4) Every pupil in an elementary school should perform in the course of his work numerous practical exercises with imitation coins, with inch scales divided into common fractions and decimals, and scales of centimetres and millimetres, balance and common small weights, both metric and British, common measures of capacity in both

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systems, compasses, dividers, protractor and squared paper. In the highest Standards, logarithms and other labour-saving methods of computation may be used where the circumstances of the staff permit these methods to be introduced with profit. Mechanical use of the "rule of three" should be avoided; and importance should be attached to giving clear ideas of ratio.

(5) The work in arithmetic should be co-ordinated with that in elementary science, so that problems suggested by the science teacher or results found in the laboratory may provide exercises in computation in the class-room.

(6) In testing proficiency in arithmetic, an intelligent knowledge of the operations and familiarity with practical work should be considered at least as important as numerical accuracy.

(7) No artificial distinction should be recognised between arithmetic and algebra. Symbolic notation, the use of signs, substitution of numerical values for symbols, transposition of terms, and the plotting and solution of a "straight-line equation" should form part of the arithmetic programme of the sixth and seventh Standards. Wherever algebraic and graphic methods save time their use should be encouraged.

(8) Geometry should be co-ordinated with arithmetic by such work as measurements of lines, areas and volumes, construction and measurement of simple geometrical figures, construction and measurement of paper models, scale drawing, and the representation of variables by graphs.

HISTORY AND CURRENT EVENTS.

WE have recently received a pamphlet in which the author, Dr. Burgess, of Columbia University, U.S.A., pleads for an alliance between Germany, Great Britain, and the United States of America. He argues that these countries are allied ethnically as against the Romance and Slavic peoples, and that their ethical standards (individual rights, local self-government, the nationality of the State, &c.) are better than those of the Romanised States. He speaks of certain minor hindrances to such a union, consisting mainly of prejudices arising out of recent events, but thinks these have passed or are passing away. He thinks that if Great Britain and the United States allied without including Germany, this Power would be forced to ally with Russia, and thus inaugurate an alliance of Europe against Anglo-Saxondom. The greater hindrances to the alliance he desires are, in his opinion, the United States tariff and the position of Russia, which naturally threatens Germany and Austria. He therefore argues that the United States should take the lead in proposing the alliance, because she is in no fear of Russia, and should begin by abolishing her "protective" policy.

DR. BURGESS'S pamphlet is a reprint of an article published in the winter of 1903-4, and is already in many points out of date. He thinks, for example, that an alliance of France with Great Britain is unlikely and useless, so little did he foresee the *entente cordiale*. He speaks of "Sweden-Norway," and now that has disappeared. He thinks Russia strong, and did not anticipate (how should he?) the anarchy and distress that now possess that country. All this shows only how necessarily short-sighted the best of us are. But we also miss from Dr. Burgess's considerations matters that even ancient history might supply. Surely the mixture of blood in Europe is far greater than he states. Romanised as the "Romance" peoples are, there are Teutonic elements in them all. Is not France the country of the Franks? Did not Goths and Lombards penetrate into Spain and Italy? And, on the other hand, is Prussia so entirely Teutonic? Whence comes the name of that kingdom? And Austria-Hungary by its very name is as much Magyar as Teutonic, not to speak of the other nations comprised in that composite monarchy. In history, as Bishop Stubbs said, all generalisations are *ipso facto* false.

THERE has been much talk this year of union among Christians. This is by no means new; the ideal of the unity of Christendom is as old as the religion itself. But what is new in some recent speeches is the recognition, to a larger extent than ever before, of the difference between unity and uniformity. Mr. Balfour, for instance, last June said, "We have to face the fact that the universal Church is divided into various ecclesiastical organisations." Note first the language used. What are "ecclesiastical organisations" if they are not Churches? Translate therefore thus: "The universal Church is divided into various Churches." Evidently the word "Church" is ambiguous. And then make a kind of genealogical tree showing the historical relations between the "various ecclesiastical organisations" into which Christendom is divided, dating the separations, East and West, Roman and Protestant, Lutheran and Calvinist, &c. Specially interesting would be such a planning out of Scottish Christianity and of Methodism. The whole would form a study like that of botany, with its species, sub-orders, and orders.

BUT what is most interesting to us as students of "history and current events" is the parallel which Mr. Balfour drew between lay and ecclesiastical history. As the original idea of the Church was unity, and as that unity has been shattered into endless fragments, so it has happened to Europe in its State organisation. To quote Mr. Balfour, "The theorists of the Middle Ages dreamed the dream of a universal Empire which should embrace all civilised mankind, but we have to face the fact that mankind is divided into various nations." The history of that dream is the subject, as we all know, of Dr. Bryce's "Holy Roman Empire," and forms the kernel of all European history even to the present day. The Roman Empire of Augustus and the Antonines, of Justinian and Heraclius, of Karl the Great and Otho III., of Charles IV. and of Charles VII., are but various forms of that ideal and its partial realisation. Virgil paints it for us in the "Aeneid," Dante in his Vision and his "De Monarchia." And it still lives on in international law and in Hague Conferences. But as idea only, not in fact.

Cumberland, Westmorland, and Furness. 128 pp. (Blackie.) 8*d*.—This little book—one of a series dealing with the English counties—is ostensibly a reader, but withal a useful pocket accompaniment for the young pedestrian. Its avowed aim is to quicken the interest of "the pupils" in their immediate surroundings, and to make school excursions interesting. To this end there are included, in addition to such chapters as one would expect on the history and geography of the counties, sections on the mines and quarries, the bird and animal life, and the distribution of plants. The whole is written in simple and easy-flowing language, and pictures and maps are inserted by way of illustration. The latter, by the way, are too small and indistinct to be of much value.

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ITEMS OF INTEREST.

GENERAL.

The Education Bill, 1906, has passed the committee stage. By the fall of the "guillotine" on July 18th, clause 36 was added to the Bill without debate. Should the Bill in its present form become an Act, the Teachers' Register will be abolished. We regret sincerely that this clause of the Bill was not discussed. The two or three members who understand the needs of secondary schools might have convinced the House of the need for a register. We recognise the shortcomings of the present register, and associate ourselves with the opinion expressed by "A Registered Teacher" in our issue of last month, that a single-column register on the lines suggested by him would serve a distinctly useful purpose in the direction of raising the status of the profession and securing public confidence.

In reply to a question which Mr. Courtenay Warner put upon the question paper of the House of Commons in regard to the new grant under the Education Bill, Mr. Birrell has made the statement that the general principle upon which the Board of Education will proceed in the ultimate distribution of the new grant will be to have regard both (*a*) to the actual increase of local burden consequent upon the Bill, and (*b*) to the amount of the education burden in the area. The Government is of opinion that it is not possible to lay down any detailed scheme for the distribution of the grant until some trustworthy estimate can be formed of the probable additional burden accruing in individual areas through the operation of the Bill; and this cannot be obtained until some experience of the arrangements that are made under the Bill between local education authorities and the owners or the trustees of voluntary schools has been gathered. Taking the country as a whole, the sum named in the Bill will considerably more than cover the total liabilities that can reasonably be expected to accrue to the local authorities generally in respect of the new burden of the structural repairs of those voluntary schools which are taken over, and in respect of sums paid by way of rent on the taking over of those schools, or in the shape of new annual charges of sinking fund and interest for the erection of any new Council schools that may be erected in lieu of existing voluntary schools. It is clear that any scheme of distribution of Exchequer grant which is to have regard in some equitable manner to the total burden borne by a locality in respect of elementary education must involve some readjustment of the existing Exchequer grants.

For these reasons the Chancellor of the Exchequer has decided upon a comprehensive scheme of allocation of all State grants in aid of the local burden in respect of elementary education throughout England and Wales. An amalgamation of the existing grants for elementary education, which are now threefold, and are paid on various complicated bases and at different dates, is on other grounds eminently desirable; and the Board of Education has for some time past had it in contemplation to attempt some administrative reform, and also to reform the tangled scheme of "school years," delayed payments, and quarterly instalments, at present attaching to the grants generally. The Government is of opinion that the best mode of dealing with the matter is to prepare a scheme by which all existing grants for elementary education, together with the new grant of £1,000,000, shall be newly distributed, and that as such a scheme cannot be prepared until information is available as to the arrangements made respecting transfers of schools under the Bill it shall be made the subject of a Bill to be introduced next year.

The Education Committee of the London County Council is suggesting to the Council a new scale of salaries for head and assistant masters and mistresses in their secondary schools. In schools planned for over 400, headmasters are to begin at £600 a year, and their salaries will increase by annual increments to £800. Headmistresses will, in similar schools, commence at £400, which amount will increase yearly to £600. In schools planned for from 201 to 400 pupils, headmasters will begin at £400, and headmistresses at £300, and their salaries may rise to £600 and £450 respectively. In schools planned for 200 and less, the initial salary of a headmaster will be £400, and of a headmistress, £300, the maxima being £500 and £400 respectively. The commencing salaries of assistant masters appointed in the future to the Council's secondary schools will be £150 a year, rising by annual increments of £10, subject to satisfactory reports, to £300 a year, with a possibility of a further increase being allowed of £10 a year to £350 a year, in cases where the Council may consider that the master is placed in a position of special responsibility. And the commencing salaries of assistant mistresses appointed in the future to the Council's secondary schools will be £120 a year, rising by annual increments of £10, subject to satisfactory reports, to £220 a year, with a possibility of further increases being allowed of £10 a year to £250 a year.

The Country in Town Exhibition, held in the Whitechapel Art Gallery from July 5th to 19th, was both interesting and encouraging to those struggling to make nature-study a living interest under the difficult conditions of town life. The plants grown from seed by the children in twenty-six public elementary schools in London were very creditable, and in the London County Council exhibit the plants grown in the schools from acorns, walnuts, and chestnuts, and the flowers, fruit, and vegetables from the school gardens are a striking proof of the good work now being done. The numerous breeding-cages (sometimes containing specimens of the caterpillar, chrysalis, and butterfly stages), the silkworms, snails, doves, frogs, and other pets, show that the children have numbers of living things to care for and to observe day by day. The descriptions and illustrations of the school journey, sometimes lasting for a week, undertaken by the Bellenden Road, Kentish Town Road, and other schools, suggest infinite possibilities to those able and willing to organise expeditions to parts of the country where the fauna, flora, and geology are all of interest. An excellent descriptive catalogue on sale was in itself full of suggestion to the teacher.

A feature of the exhibition was the well-stocked and healthy aquaria; and the simple aerating apparatus shown by Miss Hall (Stepney Borough Museum) will help to solve the chief difficulty in their care. The superintendents of the Royal park have drawn up lists of wild birds and water fowl seen in or known to breed in London parks, and also showed plants proved to grow well in a London atmosphere, thus solving a problem for the teacher who attempts school gardens in a town. Among many interesting exhibits may be mentioned that of the Girls' Public Day School Trust, which included growing plants illustrative of physiological processes; birds' skulls showing the adaptation of the beak to the food; photographs of

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common British trees taken in summer and winter; and a large geological exhibit illustrating methods of fossilisation, and fossils collected by the girls themselves from all parts of England during their holidays. Some other noticeable contributions were studies in galls, and accounts of the weekly nature walks of different forms (Ipswich Endowed School); glazed specimens showing the dispersal of fruits (Toynbee Hall); dragon-flies emerging from the pupa-case and leaf-cutting bees (Charterhouse), and two dozen fossils found in London streets (Mr. Roberts).

THROUGH a further generous gift from the founders of their training college for women secondary-school teachers, the Council of the Church Education Corporation have been enabled to begin the erection of a new wing at Cherwell Hall, Oxford, to accommodate thirty additional students. The building will be complete in November, and it is hoped that Mr. Birrell, the Minister of Education, will take part in the opening ceremony. Students may prepare for the Oxford, the London, or the Cambridge Teachers' diploma, and a new department for the training of kindergarten teachers has been recently added. Milham Ford School, in connection with Cherwell Hall, is also being rebuilt by the Church Education Corporation to accommodate 225 pupils. A new modern school for girls has great advantages in the classic city of Oxford, and a special feature in the curriculum is made of the historical and literary associations afforded by the place. Miss Catherine Dodd is organising both the training college and the school, with the help of an experienced and efficient staff

THE announcement has been made of the resignation of Dr. William T. Harris, United States commissioner of education at Washington, and of the nomination of his successor, Prof. Elmer E. Brown, of the University of California. Dr. Harris's retirement has been made possible by a retiring allowance from the Carnegie Foundation for the Advancement of Teaching. This action was taken by the trustees of the foundation under one of their rules which permits ot such action in the case of extraordinary and unusual service to education. Dr. Harris has been the commissioner of education since 1889, and has had, says *Science*, a larger and more intimate connection with the whole body of teachers than any other man. The offer to him of this retiring allowance was an act of the highest appreciation of his work, and places his name at the head of the list of distinguished men who have accepted such retiring allowances from the Carnegie Foundation.

THE report of Dr. Hartmann on the work of the medical staff of the Berlin schools shows that there were last session twenty-six doctors permanently engaged. Each had about 7,000 pupils to supervise, forming 125 classes which were distributed in seven or eight schools. An individual examination of each child is made shortly after admission, and a health card is filled up for those who are in any way abnormal. About 20 per cent. of new entrants receive cards, and, so long as the cards are not withdrawn, the holders remain under supervision. About 10·4 per cent. of the total primary-school population is on the special health roll. This gives 675 patients to each doctor, who has also about twenty-eight others from the weak-minded or stutterers' classes. The principal reasons for issuing a special health card were:—Defects of sight, 22·4 per cent.; of hearing, 11·2 per cent.; anæmia, 13 per cent.; heart trouble, 5·3 per cent.; spinal trouble, 5·7 per cent. An encouraging feature of the work is the part taken in it by the teachers, who get acquainted with the parents of afflicted children and are able to ameliorate home conditions.

Much useful advice has been given by the doctors on the subjects of ventilation, illumination, and desk accommodation. It appears that dual desks are now the standard, that five different sizes are manufactured, and that each class-room must have at least two sizes of desks. The height of the seat varies from 31·5 cm. to 46 cm. The most interesting part of the report deals with the consumption of alcohol by school children. About 80 per cent. of the whole consume alcohol in some form or other, and those who take it most regularly show the largest proportion of unsatisfactory school reports. The scourge of tuberculosis heavily afflicts Berlin, where the mortality from this cause has increased, though in the rest of Prussia it has decreased. About twice as many girls as boys are victims. This being so, the value of outdoor exercise and of special breathing exercises is being more and more inculcated in the schools. For those already attacked special arrangements are often made, so that they can get a holiday at some country sanatorium. The Berlin school doctors confine their attention to supervision. They do not prescribe for, or treat, the individual child, but are always ready to suggest means of obtaining treatment. In this manner they do not interfere with domestic management, and thus secure the active support of parents, teachers, and their professional brethren.

As the outcome of a series of conferences held during the past two years, under the chairmanship of Prof. O. Elton and Prof. H. C. Wyld, at the University of Liverpool, a local society has just been formed to promote the study and teaching of English literature and language. It hopes to effect this aim in the most practical way possible, by direct intercourse between teachers on definite matters of interest that arise out of the teaching of the subject, but at the same time the new society will welcome co-operation with other English associations framed on similar lines and having similar objects, as well as with the existing local history and geography associations, to all of which many teachers will belong. Prof. Elton, to whose keenness and active interest the success of the conference was largely due, was elected the first president. All who are interested in the teaching and study of the subject are invited to join. Mr. G. R. Mitchell, of Liverpool College, is the honorary secretary of the new association.

IN the *Monthly Record* of the League of the Empire, Prof. Bury gives the subjects for the Empire Day Competition, 1907, inter-secondary schools and inter-primary schools of the Empire. The prizes are two silver challenge cups presented by Lord Meath, and personal prizes of £5 5*s*. and £3 3*s*. respectively, given by the League of the Empire.

MR. DOUGLAS SMITH, education secretary to the county council of the North Riding of Yorkshire, has been appointed headmaster of King's College School, Wimbledon.

MR. J. E. BARTON, the senior classical master at Bradford Grammar School, has been appointed headmaster of the Crypt School, Gloucester.

MR. A. K. WATSON, of Rugby School, has been appointed headmaster of Ipswich School, in succession to the Rev. P. E. Raynor.

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The Civil Service Commissioners announce that an examination for temporary boy clerks will be held, commencing on September 25th. The last day for receiving applications is August 30th. If so many candidates qualify, 250 appointments will be made; of these, which are worth 15s. a week, rising by 1s. a week annually to 19s., 230 are in England, Scotland, or Wales, and twenty in Dublin. The age limits are fifteen and seventeen, and the subjects are:—(1) Writing and orthography; (2) arithmetic; (3) copying MS.; (4) composition; and any two of the following:—(5) geography; (6) English history; (7) Latin; (8) French; (9) German; (10) mathematics; (11) chemistry and physics.

SCOTTISH.

The debate on the Scottish estimates resolved itself into an education field day. No other subject was touched upon, and at the close the desire for further discussion was so strong that the Prime Minister had to promise another day for this purpose. The debate centred round two main topics—the new training regulations and superannuation. In regard to the former there was a distinct cleavage of opinion, one section strongly supporting the junior-student arrangements, and the other, and seemingly larger body, upholding the traditional pupil-teacher system. This difference of opinion finds expression in the new regulations, which provide meanwhile for the continuance of the two systems side by side, and on the front bench itself it was interesting to find the Secretary for Scotland championing the new system, while his colleague, the Lord Advocate, with much greater enthusiasm declared for the old. The retention of the two systems side by side may not seem a very heroic policy, but it is certainly a most sensible one, and if the new possesses the inherent superiority claimed for it by its supporters, it will soon drive the other from the field. If by any chance this proves a mistake, it will be easy to revert generally to the time-honoured system of pupil-teachership.

Superannuation found a place in practically every speech. The present scheme, it was contended, kept really able men and women out of the profession. No one can maintain that an average pension of £32 paid on reaching the age of sixty-five years is anything like adequate compensation for being deprived of the means of livelihood avowedly in the interests of the State. This was the burden of the whole debate, and from both sides of the House the Scottish Secretary was urged to bring in a Bill putting matters on a more satisfactory footing. But while the Secretary was as sympathetic personally as any of the other speakers, as Secretary for Scotland he gave scant encouragement to the proposal for immediate action. The Government's hands are full, and it cannot promise anything meanwhile, but——. This cold official reception, after the unanimous appeal from practically all the private members, has created an uneasy feeling that the Education Department is not as enthusiastic in supporting the amendment of the Act as it has been in pushing the new regulations for the training of teachers. Salvation in education is not born of codes and minutes, however admirable, but of the spirit and character of the men and women in the schools. The pension scheme does its best to secure that these will be of the poorest and meanest and narrowest, and the educational guardians do nothing, being joined to their idols—forms, and rules, and minutes. These are passed, and "all's right with the world."

The papers set at the Leaving Certificate examinations this year have maintained the high standard of excellence that has characterised them during the past three or four years. In practically all the subjects the mental capacity of the pupils for whom the papers are intended has been fairly gauged, and the questions set demand not only knowledge but intelligence at every stage. The Higher Grade English paper was perhaps the only one to which exception might be taken. It might suit very well the honours candidates who had to take it as their first paper, but it was quite beyond the range of the average higher grade pupil. The form that the paraphrase took was certainly original, but to do justice to it one would require the literary faculty of a Pater or an Arnold. But where so much was admirable, it is perhaps unfair to point out small blemishes. Certain it is that the examinations as a whole have secured, to an almost unheard of degree, the confidence of the whole teaching profession.

Mr. Gulland, M.P. for Dumfries Burghs, is to be congratulated on successfully piloting the Education of Defective Children (Scotland) Bill into the safe haven of Acts. This useful measure gives school boards power to incur expenditure in conveying cripple children, or other defectives, between their homes and the school.

The Glasgow Provincial Committee for the Training of Teachers has unanimously adopted the following resolution in regard to the superannuation scheme:—"Whereas an adequate supply of fully qualified teachers is a matter of urgent national importance, and whereas the present superannuation scheme for Scottish teachers is such as to discourage the entrance of suitable candidates to the teaching profession, this Committee is strongly of opinion that there should be instituted forthwith a scheme which will secure for teachers, at the time of their compulsory retirement, allowances reasonably proportional to their salaries and commensurate with their services to the State." The Committee, in forwarding this resolution to the Secretary for Scotland and members of Parliament, emphasises the view that the whole success of the new regulations for teachers depends upon the quality of the teaching staff, and that nothing is more likely to secure this being satisfactory than a reasonable pension scheme.

The report on the continuation classes for the session 1904–5 has just been issued. It is difficult to account for the delay in issuing these reports. If they are to be of any service, they should be to hand before the opening of the following year's session. It might be difficult to get the statistical part made up in time, but all the really suggestive and valuable parts of the report could easily have appeared a year ago. It is pointed out that the aim of the continuation classes is (i) to provide further elementary instruction for young people who have left the day school with an incomplete elementary education (Division I.); (ii) to afford opportunities for specialised instruction to those whose elementary instruction may be considered complete, and who desire to study subjects bearing on the occupations in which they are engaged, or to prepare themselves for the more highly specialised training given in technical colleges (Division II.); (iii) to secure for those who cannot attend a technical college an advanced and well-graduated course of training such as a technical college might offer (Division III.); (iv) to supply the means of recreative or artistic training to those who are engaged under any of the above heads (Division IV.). A serious feature in the report is the decline in the number of the classes and in the attendance at each. The causes of this decrease are dealt with by various inspectors. In the rural districts it is attributed partly to the indifference of local managers and partly to the length of the session.

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A CONFERENCE of representatives from the various school boards in the south of Scotland was held recently in the Burgh Buildings, Galashiels, to consider a proposal to have a central technical institute for the Border District. The proposal emanated from the Galashiels Board, and it was intimated that if the scheme was approved the Department would be prepared to make a grant towards the cost of erection. The meeting was generally in favour of some such scheme, but the difficulty will be to unite on a site that will approve itself to all parties, as local patriotism is a factor to be reckoned with all over the Borders.

FROM the thirty-third annual report of the Accountant to the Scotch Education Department, it appears that the total sum paid away in grants during the year was £1,001,611 8*s.*, being £61,204 3*s.* in excess of the amount in the previous year. The total expenditure on education was £3,099,884 3*s.* 7*d.*, being an increase of £137,242 7*s.* 11*d.* on the past year. Of this amount £1,645,296 5*s.* 8*d.* was expended on teachers' salaries, being an increase of £97,265 1*s.* 1*d.* on the amount shown in the last report.

IRISH.

SOME free and frank criticism on Irish education was uttered by Dr. Starkie in his evidence before the Commission which is inquiring into the working of the Department of Agriculture and Technical Instruction. Dr. Starkie has more expert and official acquaintance with the different branches of education than anyone else in Ireland, with primary as resident Commissioner of National Education, with secondary as an Intermediate Commissioner, and with university as a former Fellow of Trinity and President of Queen's College, Galway. When he says, therefore, that the state of educational affairs is thoroughly unsatisfactory, his words cannot be regarded merely as *obiter dicta*. Of the 8,500 primary schools, in 5,500 there is only one teacher, who has to teach a host of children varying in age from three to fifteen. The girls' schools are infinitely better than the boys' schools. There are, however, too many schools, due to an extraordinary policy of extravagance on the part of the National Board thirty years ago, when, with a decreasing population, the number of schools was increased by 2,000. Dr. Starkie was very severe on the use made of the equivalent grant of 1902. In England and Scotland the corresponding money has gone to education, but in Ireland it has been sacrificed to the exigencies of politics, and devoted to the use of a Land Bill, the purchase of steam dredges, the construction of harbours, and the like. Mr. Wyndham, to secure these ends, deliberately told Parliament that it would be a waste of money to spend more on education in Ireland, and would therefore go down to history as one who had stopped the wheels of development of education there for generations. For when he made this statement, by his own action he had made it impossible to build new schools, while the condition of the existing schools was a scandal to civilisation.

DR. STARKIE was equally severe on the Government action towards the intermediate system. The Commissioners wished to appoint inspectors, and the Government replied that the cost of the examinations—£2 per head—was too high, and so money could not be afforded for supervision. The Commissioners replied that inspection was intended to do away with examinations, and asked the Government to bring in a Bill to that effect, but year after year goes by and nothing is done. A temporary expedient was adopted of a Consultative Committee representing primary and intermediate authorities, but the extraordinary thing was that the National Board and the Intermediate Board have only one representative apiece on it, while the Department, though its interest in primary and secondary education was far less, had three. And then this committee had only met five times in six years, and when it passed resolutions it could not compel the different authorities to carry them out. There could be no satisfactory co-ordination until there was only one educational authority, but unfortunately any proposed scheme would certainly meet with bitter opposition.

AN important contribution to educational discussion has been made by Father A. Murphy, in a paper read by him before the Maynooth Union on "Co-ordination in Education." Father Murphy's idea is that from infancy up to the age of eleven or twelve, the school work of any child is so elementary that it is quite possible to devise a programme for all pupils during that period, whatever their ultimate destination. At that age pupils who wished for a secondary education should leave the primary and enter the secondary school; while those who remained should continue in the primary school for two more years, and be divided into three classes: (1) those destined to become unskilled labourers, (2) those to be employed in trade or industries, and (3) those intended for some form of business shop, or counting house, or the public service. The two latter classes on leaving school should enter special schools adapted to their requirements. Liberal scholarships should be offered to enable promising children to enter secondary schools.

IMPORTANT changes are announced in the programme of the Royal University for next year. The most striking is the abolition of honours at the Matriculation examination. For the future this will be only a pass examination, and instead of exhibitions awarded on the result of it, there will be an entirely new scholarship scheme, by which scholarships will be awarded in classics, mathematics, modern languages, and experimental science. These will be of the value £40, £30, and £20, tenable for three years; and there will also be prizes of £20 and £10. The exhibition scheme at the M.B. degree examination is also considerably changed, and instead of exhibitions awarded on the whole course, there will be three exhibitions of 20 guineas each, awarded in special branches, viz., in the medical group, in the surgical group, and in the group of midwifery and obstetrics. A new Chancellor has at last been appointed—Lord Castletown—in succession to the Earl of Meath, who resigned in consequence of the disturbances at the giving of degrees last autumn.

THE Royal Commission on Trinity College has held its first meeting in London, and has decided on its course of procedure. It has determined, in the first place, to invite written statements from the Provost and Fellows of Trinity College, the professors of the University of Dublin, and other persons and bodies. The next meeting will be in London on August 31st. Meanwhile, persons wishing to lay their views before the Commission are requested to do so in writing, and to forward their statements to the Secretary, 4, Upper Merrion Street, Dublin.

LADIES have very early signalised their admission to Trinity College in competition on level terms with the men for scholarships. Miss O. C. Purser, a Senior

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Fresh(wo)man, has won a classical scholarship on marks which in an ordinary year would have obtained for her first place, and was only beaten by a male candidate whose total was the highest since the year of Prof. Bury.

WELSH.

It is reported that during the last year, in the Cardiff district, the lecturer on temperance has delivered 194 lectures to 18,149 scholars and 549 teachers in connection with elementary schools, in accordance with the recommendations of the Board of Education.

In the Gowerton Schools, Pontardulais Council School (boys) has occupied the highest position for a year and a half in the matter of attendances. In April, May, and June it has held the highest position in the council schools of the county, with an average attendance of 98·3. The interesting point about this result is that the school is not a town school, a considerable number of the children living even two or three miles away.

The salary offered by the Governors in the advertisement for a headmaster for the Monmouth Grammar School has been the subject of adverse criticism by the Monmouthshire education authority. The giving of a grant of £500 to the school by the local authority naturally carries with it effective right of criticism. The total emoluments of the headmaster in the terms of the advertisement would be £1,100. It was urged that such a sum was disproproportionate to the salaries given to the assistant-masters. It was stated that the last headmaster had a double first-class. To this it was replied that one member knew a man with a "double first" only receiving £120 a year. Eventually it was resolved that the Governors of the school be asked to reconsider the whole position. One member of the local authority stated that the school was a charity school, and he hoped they were not going to "bring it down to the level of an ordinary secondary school."

The Welsh Congregational Union at its recent meeting at Blaenau Festiniog discussed the question of education in Wales. It was urged that the history and language of Wales must obtain a more prominent place in the curricula of the schools and the colleges. It was described as a "strange anomaly that the Welsh parts of Wales were more remiss than the Anglicised parts in this respect," so far as elementary schools were concerned. Of the intermediate schools, forty-two gave no place whatever to Welsh, and of the 10,000 scholars in all the schools only 2,000 obtained any tuition in the subject, and of these, again, only 500 were presented for examination.

Mr. Mosely has now a splendid scheme for a commission of teachers, to the number of 600, from the United Kingdom to visit the United States. A committee has been appointed to deal with the arrangements, so far as Welsh teachers are concerned. Applicants must be engaged in the teaching profession. When applicants have obtained leave of absence from the education authorities their names will be added to a list which will be considered by a committee especially appointed to select those who are to make the trip. The generous offer of the steamship companies applies only to the months of November, December, January, February, and March. Anything from four to ten weeks may be required for the entire journey. The cost of the passage will be £5 return, including comfortable cabin accommodation, victualling (except stimulants), and use of bed and table linen on board, but not stewards' fees (5*s.* to 10*s.*). Railway travelling in the States and Canada is at the rate of a penny a mile, and accommodation can be obtained in boarding-houses from about 6*s.* 3*d.* per head upwards. Applicants should state what sum they are prepared to spend, and their quarters will be arranged for them. It may be mentioned in describing this project that for a number of years a Gilchrist scholarship has been given by the University of Wales, open to graduates, to pursue a special inquiry abroad.

At the Aberdare County Intermediate School the question is being raised of converting the dual system into separate schools for boys and girls. A letter has been sent from the County Council asking the Governors of the school to look out for a suitable site to erect a new school for girls, and to leave the present school entirely for the boys. The Governors, on receiving this letter, keenly criticised the county decision. The chairman held that such a change would convert Aberdare into a fourth-rate school. The constitution of other county schools and higher elementary schools stopped the influx of pupils, and the separate schools for boys and girls could only be small. It was decided to try to convene a joint meeting of the Governors of all the county schools affected, with the view of protesting against the proposed alteration.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Dictionary of Quotations (German). By L. Dalbiac. vi.+485 pp. (Sonnenschein.) 7*s.* 6*d.*—This is a useful book of reference, which might have been much improved if someone with a really scholarly knowledge of German as well as English had read the proofs, or, better still, the MS. before it went to the printers. The number of misprints is painfully large, and the renderings in many cases are unfaithful to the letter, and still more often to the spirit of the original. This is in part due to the mistaken idea that verse should (in a book of this kind) be rendered in verse. Compare the impressive lines of Grillparzer:

> Willst du mit den Kinderhänden
> In des Schicksals Speichen greifen?
> Seines Donnerwagens Lauf
> Hält kein sterblich Wesen auf,

with Mr. Walter Sichel's rendering:

> Vainly little hands like children
> Round the wheels of Fate we play:
> Fate, whose chariot ploughs the thunder,
> Brooks no puny child of clay.

Mirza-Schaffy's dainty

> Ein graues Auge—ein schlaues Auge;
> Auf schelmische Launen—deuten die braunen

becomes in Miss E. d'Esterre's rendering:

> Deep and sly — The brown, less shocking,
> Beware the eye — Merry and mocking,
> Of greyish dye! — Also pass by!

Would not simple prose be better than this transmogrification?

F. von Zobeltitz, Der Backfischkasten. Edited by G. Hein. iv.+139 pp. (Arnold.) 2*s.*—We do not remember coming across an edition of a foreign text as little to be

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recommended as this. The original story may have done good service as a railway novel; here we have only a selection which does *not* "form a continuous whole." Fresh characters appear in the most bewildering fashion; doubtless they played a part in the sections omitted. What has been retained of the story deals almost entirely with life at a "finishing school." That the book will appeal to boys, even the editor does not pretend; and we can assure him that our acquaintance with "British schoolgirls" does not support him in his belief that "the fun and humour will no doubt appeal" to them. The fun is largely horse-play and the humour commonplace. The language is very slangy; the acquisition of it may "greatly help to increase the pupil's vocabulary," but in an undesirable direction. Is it helpful to learn "sich mopsen, scheusslich, schnuppe, rabiat, Bombenelement"? The notes do not rise above the ordinary level. The German-English vocabulary is not quite complete. Altogether a book we cannot recommend at all.

Stories from Grimm. Edited by A. R. Hope Moncrieff. 122 pp. (Blackie.) 1*s.* 6*d.*—We have here twelve fairy-tales from the famous collection of the Brothers Grimm. The type is not altogether satisfactory, but the illustrations by Helen Stratton are for the most part good. The notes consist largely of renderings which are often too literal for our taste. There are not many misprints. The vocabulary is practically complete. On the whole, an edition to be commended.

F. Max Müller, Deutsche Liebe. Edited by J. C. Johnston. xx.+185 pp. (Ginn.) 2*s.*—Max Müller's romance will always exert its subtle charm on the cultured man or woman who takes it up, but it is no tale for the class-room. The editor might therefore have spared himself the trouble of compiling the vocabulary (which is good) and of writing many of the notes. The private student will only be annnoyed by finding the editor asking him questions on rhetoric, or sending him to the classical dictionary for the meaning of "Lethe," or telling him that a *Groschen* is a silver coin in use in Germany (where?), or asking him how many parts of speech *der* represents, or assuring him that Goethe's *Über allen Gipfeln ist Ruh* is "not perfect in its metrical form."

A First German Course for Science Students. By Prof. H. G. Fiedler and F. E. Sandbach. 99 pp. (Morning.) 2*s.* 6*d.*—For the student of either chemistry or physics engaged in advanced work some knowledge of German is essential in order that the original literature on the subject may be consulted. Since the London University has made "scientific" French and German compulsory for the B.Sc. examination, many students who have not learnt German at school are turning their attention to this subject; the work under notice is intended primarily to meet the requirements of such students. The book is divided into two parts; the earlier contains a number of passages for translation, whilst the latter gives a short outline of grammar. Each passage forms a connected piece of simple technical prose selected alternately from the provinces of chemistry and physics, so that as many technical terms as possible are introduced to the reader. The grammatical portion has been very much condensed, perhaps too much so for the proper appreciation of the language. The rules are as much as possible illustrated by words likely to occur in scientific literature; a short vocabulary is added, which again mainly consists of words frequently made use of in scientific papers. The book is printed in Latin characters throughout, following the custom now adopted in nearly all German scientific publications. This certainly greatly lessens the labour of the beginner but will restrict his reading to such literature. From the point of view of the student anxious to understand scientific literature with a minimum of trouble the book should be of considerable value; we would not, however, recommend it for use in other circumstances, particularly for school use, especially as the style of the German is very second-rate compared with that of the usual school readers. A useful feature are the illustrations, which enable the student to visualise very rapidly the English meaning of the German words without referring to the vocabulary.

Classics.

M. Tulli Ciceronis pro Sexto Roscio Amerino Oratio. Edited by J. C. Nicol. xxxii.+150 pp. (Cambridge University Press.) 2*s.* 6*d.*—The introduction to this book is excellent; we would specially mention the numerous quotations from the text which are given in footnotes to this introduction. The notes are sound and scholarly, but as usual are of mixed kinds. Thus we have references to Nägelsbach and German quotations (untranslated), notes on antiquities, and other matters which appeal to a somewhat advanced knowledge, cheek by jowl with explanations of the historic infinitive, translations of *nihil est quod . . .*, *huc accedit quod . . .*, and other more simple phrases and words, including the numerals (p. 62), all too elementary for such a book as the first notes imply. The note on *spero* (p. 63) is misleading. It runs: "The rule that *spero* takes fut. infinitive in the object clause is by no means invariable in classical Latin. *Possum* of course has no fut. inf." In this case, *posse* may equally well represent *possum* in Or. Recta; and in cases where *spero* actually refers to present time, of course the present alone is possible. But, whether or no, a little more should have been said, or nothing, if the reader, observing an exception, is to be taught how to understand its reason. Mr. Nicol has read Plautus, and he points out elsewhere the colloquial style of this speech in parts. A more serious matter still is the ignoring of Plautus in the note on the jussive subjunctive (p. 100). We have the jussive present in classical phrases like *velim facias*; and there is no reason in principle for the restriction asserted, which, in fact, does not exist if Latin be studied as a whole. As regards *societas coitur* (p. 73), the noun has a cognate sense, which we think makes it unlikely that *coire* is transitive here. We offer Mr. Nicol a rendering for *ire debui* to fill the gap which he speaks of on p. 61: "I was bound to go." On the whole this is a useful little book, and practical; and we must congratulate the Pitt Press on the enormous improvement in type and the arrangement of the page. Their new school-books are a delight to the eye; the old ones, as their larger volumes still are, hideous.

Scriptorum Classicum Bibliotheca Oxoniensis. Tibulli aliorumque libri tres. By J. P. Postgate. 1*s.* 6*d.* paper, 2*s.* cloth.—We offer a hearty welcome to the new volume of the Oxford Bibliotheca. Dr. Postgate is a high authority on the criticism of Latin poets, and he has made Propertius and Tibullus specially his own. We are glad, it must be admitted, that there is less room in Tibullus for the re-arrangement which in Propertius seems to have been a little overdone; this is a sound piece of work, and the introduction is a valuable account of the MS. evidence. The text is based on four MSS.: the Ambrosianus, Vaticanus (3270), Guelferbytanus, and Cinacianus, with occasional references to some of the many inferior MSS.

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Matriculation Latin Construing Book. By A. E. Watt and B. J. Hayes. viii.+136+70 pp. (University Tutorial Series.) 2*s*.—We have on another occasion spoken in praise of Mr. Hayes's *Latin Grammar*, and we can commend also this new book. It consists of a brief Latin syntax, each section being followed by exercises; a collection of most of the pieces set as unseen in the London Matriculation; and a dictionary. The earlier part is very clearly put, and eminently practical. As an instance of the authors' intelligence and independence, let us quote § 45:—"Direct questions in which the verb is in the subjunctive expect as answer a command or statement of obligation." This is much better than the usual talk about "deliberative"; and one step further towards principles would lead to the grouping of both question and answer, along with the "indignant" use, under jussive subjunctive; which is one, whether it be put as question, as affirmation, as command, or as prohibition. There is an omission in § 56; it should be added that reports may be made by one of the original speakers, in which case the pronouns will not be third person. An explanation of the origin of *quin* (p. 62) would clear up the puzzle of its several uses, so strangely different at first sight. The rules for construing are good; but we must protest against the authors' English in one place at least (p. 77), where they give "adopted a circuitous route" as "more natural English" than "led them round by a longer route"! When we come to the second part, we see that this excellent introduction has been leading up, not to the understanding of a text, but to the cramming of snippets. We very much fear that those who use the book will leave their Latin without having read one complete book; but we must not lay all the blame on our editors—that is due to those who spoilt the London Matriculation, and are thereby doing great harm to classical education.

Latin Passages for Unseen Translation. Third Edition. By A. M. Cook and E. C. Marchant. ii. + 128 pp. (Methuen.) 1*s*. 6*d*.—There is no need for a detailed examination of this, the Latin half of the editors' well-known book, *Passages for Unseen Translation*. We may, however, call attention to a number of unhackneyed pieces from Ausonius, Florus, Cato, the inscriptions; even from Sir Thomas More, Erasmus, Milton, and Richard Bentley.

New Classical Library. Edited by Dr. Emil Reich. *The Theaetetus and Philebus* of Plato. Translated and explained by H. F. Carlill. xxv. + 202 pp.

Plutarch's Lives of Alexander, Pericles, Caius Caesar, and Aemilius Paulus. Translated by W. R. Frazer. 263 pp.

The Annals of Tacitus. I.-VI. Translated by A. V. Symonds. xiii.+295 pp.

(Swan Sonnenschein.) 3*s*. 6*d*. each cloth, 4*s*. 6*d*. leather.

Mr. Carlill is more than a mere translator; he has views on Plato's philosophy, and has evidently made a thorough study of his works. He is a follower of Dr. Jackson in his opinion of Plato's theory of ideas; the common-sense opinion that Plato's mind grew and developed, and that what he thought of the ideas at first was not what he thought last. Mr. Carlill regards the *Theaetetus* as the central point of Plato's work; he also believes it to be a revision of an earlier dialogue. This he attempts to show by assuming that the original was a piece of perfect formal symmetry, which was in the revision formally marred by the addition of two or three sections "considerably superior in matter and considerably inferior in form to the rest of the work, . . . inserted with a perceptible disregard of the unity of the whole." We are not quite convinced by his reasoning, not least because we do not see the likelihood of such exact symmetry (in the counting of pages) as he assumes for the original draft; but there is no space to discuss the matter here. We must refer readers to the introduction and notes for Mr. Carlill's justification. The translation is good, and readers of this difficult dialogue will certainly find the book useful. To the *Philebus* is added an "Essay on the Theory of Form" in that dialogue and its place in science. Mr. Carlill holds that the Theory of Form is not an excrescence on the Platonic philosophy, but "the theory of Ideas itself in its objective aspect."

We need not linger over the other two books. The *Plutarch* is an unpretending piece of translation, written in sober English, and a creditable performance. The *Tacitus*, like all translations, suffers by a comparison with the original; compared with the Roman's forceful brevity it is wordy and diffuse. But he is a bold man who would translate Tacitus. Both books may be read with profit and some pleasure by readers who are ignorant of Latin and Greek.

The series is well printed, and the volumes light and handy; they deserve a nicer binding.

English.

The Essentials of Composition and Rhetoric. By A. H. Espenshade. vii.+387 pp. (Heath.) 3*s*. 6*d*.—This volume is welcome, and deserves careful study. Nothing better has been published at all recently. Rhetoric, as the subject is understood in America, gets but scanty attention in this country, and even composition as an art improves slowly. The book is the outcome of several years of practical experience, and displays an intimate acquaintance with all the bearings of the subject; but it may be said that only the strictly teachable parts of the matters discussed are treated here. The book does not attempt the impossible. Absolute grace of style it still leaves to that inborn faculty which no text-book can ever bestow. There is no novelty in this volume, but as a practical exposition of plain truths generally agreed upon, and as a fresh and interesting treatment of an important subject, it is to be commended.

Shelley's Prometheus Unbound. A Study. By I. Macmillan Brown. 187 pp. (Whitcombe and Tombs.) 3*s*.—There is much that is useful in this little volume, which evidently is the result of careful study and much thinking. Many valuable suggestions are made in it, and the last chapter is exceptionally well worth attention. A writer who aims at literary criticism should himself write a style beyond reproach; hence the ambiguity which marks the opening sentences on p. 50, and the uncertain grammar to be found on p. 122, have struck us unpleasantly. We feel compelled to take exception to "mutuality," "vastitudes," "moraller," "proverbialised," and "braggarty" as words forming any part of real English literature; and the phrases "will assimilate to," "disanimalled emotion," "close echoes of the Crucifixion," and "stretch their kaleidoscope over" have puzzled us greatly.

Macaulay's Third Chapter. 128 pp. *The Age of the Antonines.* 104 pp. *Bunyan's Pilgrim's Progress.* Part I. 125 pp. Part II. 128 pp. *Burke's Speeches on America.* 127 pp. (Blackie.) 6*d*. each.—The titles of these little booklets show how capitally Dr. Rouse is succeeding in his aim of providing for junior and middle forms little reading-books which are quite out of the ordinary line of such publications. From the first we have been able to say nothing but praise of these little readers, and the selection at present under notice is every whit as good as all that has gone before.

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Selections from the Writings of Benjamin Franklin. By W. W. Culter. xviii.+366 pp. (Harrap.) 1*s.* 6*d.* net.—Despite the number of pages, this little edition will almost go into a small coat-pocket. It is neat and carefully got up in every way, and reflects credit on its compiler and editor. Franklin's autobiography would not make a good school-book unless it were Bowdlerised; but comparatively few people are acquainted with his prose work outside that immortal volume. So here we have extracts from "Poor Richard's Almanac," from Franklin's Essays and Miscellanies, a considerable number of his personal letters, and in an appendix an interesting feature is included in the shape of Franklin's examination in the House of Commons in 1766. There are some useful notes and a good introduction, and we think that from every point of view the book is worth its price.

Burke's Speeches on America. By A. D. Innes. xxxiii.+200 pp. (Cambridge University Press.) 3*s.*—This is excellent in every respect. The amount of work that has been put into the introduction is very great, although it has been so skilfully condensed that it occupies comparatively little space, and the notes are a still further evidence of painstaking care. The sketch of Burke's life is well done, and the historical survey of Great Britain's relations with her American colonies leaves little to be desired, considering the size and scope of this edition. We cordially commend it.

Dickens's Barnaby Rudge. By A. A. Barter. xxiv.+654 pp. (Black.) 2*s.* 6*d.*—This volume follows the general plan of the now familiar series which has already added some novels of Dickens and Thackeray to those of Scott as reading-books for school use. The editorial work has been done with care and success, and the inclusion of this great work from Dickens's pen in this series is in every way commendable.

Outlines of English Literature. By H. E. Evans. 218 pp. (Relfe.) 1*s.* 6*d.*—This little work is designed primarily for examination use, and its scheme certainly has been carefully worked out. It condenses into a small number of pages a sketch of the history of English literature, and for the most part it follows the plan of giving a brief, satisfactory account of each of the really significant contributors to English letters. The sources of the work of each writer, and the influences which moulded him, are dealt with in the same brief but direct fashion, and the arrangement of this kind of matter which the author has followed renders it easy to memorise it. The analecta, chronological table, historical appendix, and index are splendid; and the book ought to serve, not only as an examination manual, but as a serviceable introduction to the masters of English literary criticism.

History

A Brief Survey of European History. By A. Hassall. xv.+370 pp. (Blackie.) 4*s.* 6*d.*—The range of this book is from the coronation of Charles the Great to the present day, but there is also a slight sketch of events from 476 to 800. There are four coloured maps and nine others; there is an index, and there are also short bibliographies to each chapter, consisting of secondary books, and we get therefrom the impression that Hassall's "Handbook of European History Chronologically Arranged" is the most generally useful authority. The author has undoubtedly included all the main facts of his story, and they are mostly correct, but until he reaches the Reformation period there is a strange confusion in the order of the telling. The consequence is much repetition (and even inconsistencies), and a feeling that we are never getting on with the story. In spite, too, of the promise in the preface that "special attention is given to the causes and results of the great movements in History," Mr. Hassall seems never to get far below the surface. There are often too many facts crowded together, and not sufficient breathing space to think of the why and the how. Often, in his hurry, Mr. Hassall mentions casually events and persons without stopping to explain them. The author is also too fond of emphasis, and he abounds in strong epithets. "Enormous," "startling," "marvellous," "important," "remarkable," "profound," and especially "immense," are scattered over the pages until they lose all meaning. Several alliances, "triple" and "quadruple," are "the famous." We are always "marking epochs" and passing through "ages of consolidation" or "of growing nationality." The book will be useful for those who have time and patience to analyse it, and for those who have a teacher at hand to explain many points; but we still look for a book of this size which will tell the English reader the story of Europe.

On the Spanish Main. By J. Masefield. xii.+344 pp. (Methuen.) 10*s.* 6*d.* net.—The sub-title describes this book as an account of "some English forays on the Isthmus of Darien with a description of the Buccaneers and a short account of old-time ships and sailors." It should be in every school library. There is no general introduction, but there is an account of the authorities given at the end of the chapters. There are twenty-two illustrations, reproductions of old pictures or maps. The narrative embraces the doings of Drake, Oxenham, Morgan, Dampier, and descriptions of the lives of the buccaneers in the sixteenth and seventeenth century struggles for the possession of tropical America. There have been recently many books published which should take the place of the novels of the last generation. This is one of them, and we think it would be better reading for our boys than even Kingsley's "Westward Ho!" It is just as exciting, and has the advantage that the reader knows he is getting history, whereas the novelist is not bound to guarantee all his presentations.

War and Reform, 1789–1837. By A. Hassall. xx.+304 pp. (Rivingtons.) 3*s.*—This is to be the last of a series announced under the title of Rivingtons' "Text-books of English History." It is the second to be published; the first, on the Tudor dynasty, was reviewed by us some months ago. Mr. Hassall has had the assistance of Mr. C. T. Knaus, of Bradford, and the consequence is that the book is more readable, better adapted to school children, than its companion volume. In six chapters we have the story of the war with France and that of parliamentary reform, told clearly and accurately. There are also a chapter on literature, a synopsis of principal events arranged in columns, a list of important dates in British colonial history, and of events in India. There are also some half a dozen small maps and an index.

Stories from Scottish History. Selected by M. Edgar. xvii.+238 pp. (Harrap.) 1*s.* 6*d.*—These stories have been taken entirely from Sir Walter Scott's "Tales of a Grandfather," and whatever objection we might raise against this treatment of a child's classic is met, and we are bound to say met fairly well, in the preface. Certainly it is better that these stories should be read than that Scott should be quite ignored, and it is the editor's wish that he should be read in his entirety. There are a short

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introduction, sixteen good pictures, and a two-page chronological table. The selections end with 1603.

Outlines of English History. By H. Ince and J. Gilbert. viii.+157 pp. (Clive.) 1*s.* 6*d.*—A new edition of our old friend "Ince and Gilbert," brought up to date and even the rhyming summary largely rewritten. If there are any who can still teach English history from this old and curiously arranged book, they had better get this edition, which has been revised and, so far as it is possible, corrected in the light of modern research.

Cromwell. The Campaigns of Edge Hill, Marston Moor, Naseby, and of 1648 in the North of England. By Captain P. A. Charrier. 22 pp. (Relfe.) 6*s.* net.—This is a book written by a soldier for soldiers, the scope of which is sufficiently indicated by its title and its number of pages. The most valuable feature is a series of twenty-three plans, printed on separate sheets of paper, which are accommodated in a pocket at the end of the book. These should prove useful for teachers who wish to interest their pupils in the details of military matters.

A School History of Warwickshire. By B. C. A. Windle. xiv.+222 pp. (Methuen.) 1*s.* 6*d.*—Dr. Windle has only just left Warwickshire to preside over Queen's College, Cork. He is an F.R.S. and F.S.A., and if these titles had not been on the title-page we should have guessed at least the latter from the pages of this book. It is an excellent little manual of Warwickshire antiquities, and would be useful for village and larger libraries, but it is scarcely a "school history." Surely our pupils, even Warwickshire ones, would be wearied with the antiquarian details as to families and ruined buildings over which Dr. Windle is so enthusiastic, and about which he evidently knows so much. The temptation was great with Coventry, Warwick, and Stratford as texts, but Dr. Windle should have thought of his audience. He is evidently fonder of mediæval Warwickshire than of modern developments therein, for though he gives us a good account of Birmingham and its manufactures, he sighs for the quiet times, "free from the modern pests of rush, dust, noise, and smell."

Geography.

Wall Map of Palestine. Stanford's new Orographical Series. 16*s.* coloured sheets, 20*s.* mounted on rollers. Size, 52 in.×62 in.; scale, 4 miles to the inch.—This is the newest of the well-known series of orographical wall maps now being compiled under the direction of Mr. H. J. Mackinder. Europe and Africa have already appeared; Asia and North America are promised shortly. The general scheme has as its chief features the colouring of the different land-elevations in varying tints of brown, and the employment of grey, almost transparent, lettering, so as to allow of the insertion of numerous names without spoiling the graphic effect of the colouring. Both features are eminently good; the contour lines, drawn every 500 ft. for the lower and every 1,000 ft. for the higher levels, bring out the orography of Palestine most distinctly, while the grey names, numerous enough for all practical purposes, enable the teacher to use the map as a test-map if he wishes. A rather lavish display of different types of printing for Old Testament and New Testament, and for classical and modern names, is perhaps a little disconcerting, if not actually confusing, at times. Much care has been expended on the work. The surveys of the Palestine Exploration Fund are the chief sources which have been drawn upon—a fact which, combined with the director's name, is sufficient guarantee for accuracy. Of course, outside Palestine proper precise data fail, and the publishers in a printed statement expressly guard themselves against possible criticism in this quarter; as, however, no one would buy the map for this region, the possible divergence from strict accuracy here may be disregarded. The great feature of Palestine, the Jordan depression, is excellently shown, as it need be, when one remembers that the bottom of the Dead Sea is nearly half a mile below the surface-level of the Mediterranean, or that Jericho, with its tropical palms, lies some 10,000 ft. below Mount Hermon, with its everlasting snow-cap. A point we note—and one that is very seldom shown—is that a distinction is plainly drawn between the typical Wadis of the Mediterranean region and the streams which are really rivers all the year round. Finally, it is hardly necessary to say that the map is right up to date; a reference to the railway extension, which may be said to take Damascus as a base, will confirm this, no unimportant point in a map of latter-day Palestine, when proposals are afoot to run motor-boats on the Sea of Galilee to Tiberias and Capernaum in connection with the Mecca line!

Stanford's Handy Atlas of Modern Geography. Second Edition. (Stanford.) 10*s.* 6*d.*—This atlas contains thirty maps taken from Stanford's Quarto Atlas, brought well up to date, an important point in a "handy" atlas. To test it we looked for the new Alberta and Saskatchewan of Canada, the East Bengal and Assam of India, the effects of the Treaty of Portland on the political geography of Japan, and the results of the boundary demarcations between Brazil and Bolivia in the Acre territory, and between England and Portugal in what used to be called Barotseland. The maps stood the test excellently. For the rest, the work is well adapted to its obvious object, viz. a ready reference, say, for the morning newspaper. As such it is, of course, not likely to be of much use for class-teaching purposes. It is crammed full of names—European Russia appears more thickly thronged with towns than Holland—and there is, besides, a very full index of some 100 pages, enabling the reader to locate positions whether the names be engraved or not.

Philip's Model Atlas. (Philip.) 6*d.*—The chief feature of this small atlas is its relief maps, one of which faces nearly every political map. They are very effectively printed, without names, in blue and photographic purple, and in the hands of good teachers should be valuable. Altogether the book contains eighteen relief maps, twenty political maps, and eleven diagrams. The register is occasionally a little defective, but, generally speaking, the whole work is very creditable, and, for the money, excellent. We note that the publishers have wisely inserted the British Isles, or some portion of them, as a size reference in the corners of the maps. We commend the atlas for junior forms.

Pitman's New Era Geography Reader. Our Imperial Heritage. 240 pp.; illustrated; maps. (Pitman.) 1*s.* 8*d.*—This book, dealing with the British Empire, is one of a series designed to "correlate geography with object lessons." Each colony has its history sketched as a preliminary to the account of its geography. To encourage or develop patriotism, the several national songs are given. The numerous pictures are quite good and the letterpress interesting, so that those teachers who like "readers" for their geography will not go far wrong in trying the book. Its least satisfactory feature is its "handbook" at the end.

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Chambers's Twentieth Century Geography Readers. (Chambers.) Book I. *Little Folks at Home and Abroad.* 10*d.* Book II. *Life in Our Own and Other Lands.* 1*s.*—These titles speak for themselves. The books introduce the elementary facts of geography in the guise of a short story, or rather series of episodes, in which the *dramatis personae* are the usual Tom and Lucy, or Alice and Jack, as inquirers after knowledge, with Uncle Jim and Captain Bell and others as purveyors thereof. Ex pede Herculem :—"'Here's another forest,' said Jim, as they came to more trees. 'No,' said his father, 'this is a wood. There are not enough trees here to call it a forest.'" There are plenty of illustrations, coloured as well as plain, and the series is completed in eight books.

Mathematics.

A Manual of Geometry. By W. D. Eggar. xxiii.+325 pp. (Macmillan.) 3*s.* 6*d.*—In this manual the subject is treated to a large extent on the lines of the *Practical Exercises in Geometry* by the same author, but formal proofs bulk more prominently, and much additional matter is included. It is stated in the preface that the book covers the ground necessary for various examinations, and one is disposed to infer from the reference to Euclid as a university subject that a course such as that laid down in the manual may be considered sufficient for the school treatment of geometry. We sincerely hope that we are incorrect in this inference, but in any case we think it would be unfortunate if school geometry were confined within the limits of the manual. The practical geometry is excellent, and the numerous illustrations that lead up to and suggest the leading theorems are both instructive and interesting; but we think that much more might be, and should be, done to cultivate the feeling for geometry as distinct from geometrical drawing. A course of drawing, if pushed too far, may be just as fatal to a pupil's education as any course of Euclid, and, except under the guidance of the best teachers, tends to become purely mechanical. It seems very strange that in a book so marked with the practical spirit as the manual before us so little use has been made of the principle of symmetry, axial or central. No doubt, from the standpoint of examinations, the use of this principle introduces, or is supposed to introduce, certain difficulties; but the principle itself is so fruitful and so simple that it should occupy a leading place in elementary instruction. We feel grateful to the author of this manual for a presentation of the practical side of geometry that should be of great service to teachers, but we must also state that, as a manual of geometry, as distinct from geometrical drawing, it does not so fully commend itself to us.

A Junior Arithmetic. By Charles Pendlebury, assisted by F. E. Robinson. xii.+204 pp. (Bell.) 1*s.* 6*d.* (without answers).—This book is intended for the middle and lower forms of secondary schools, and differs to a considerable extent from the earlier book of a similar character, chiefly in the effort to meet the recommendations of the committee of the Mathematical Association. The general method of treatment seems to be similar to that adopted in the other works on arithmetic that bear Mr. Pendlebury's name.

Junior Arithmetic. By W. G. Borchardt. viii.+221+xl. pp. (Rivingtons.) 2*s.* (with answers).—This volume is based on the *Arithmetical Types and Examples* by the same author, but contains new matter; it possesses many useful features, and seems to us to be a really good book for school use.

Woolwich Mathematical Papers for the Years 1896–1905. Edited by E. J. Brooksmith. (Macmillan.) 6*s.*—Teachers will welcome the new volume of papers, and should find in them numerous suggestions for their daily work.

Westminster Test Cards. Scheme B. By E. G. Loder. (National Society's Depository.)—These cards are arranged in packets, one packet for each of Standards I.–VII.; each packet contains thirty-two cards, and each card two sets of questions; each packet contains two copies of answers, and the price per packet is one shilling net. As a help to preparing for examinations, the cards will save a good deal of time to the teacher; we hope they will not be used as a substitute for a regular text-book.

Oliver and Boyd's New Number Exercises. Book VII. 128 pp. (Oliver and Boyd.) Price (paper covers) 7*d.*—This part, which seems to be the last of the series, takes up the work of the seventh and eighth years, the earlier sections providing a revisal of previous work. Exercises in mensuration, including examples and illustrations of the metric system, are introduced at an early stage; a considerable portion of the book deals with the usual commercial arithmetic, and some attention is given to approximations, while graphical illustrations also appear. The examples are of a straightforward kind, and the book as a whole is a fair representative of its class.

Science and Technology.

Elementary Science for the Preliminary Certificate Examination (General Section). Edited by R. W. Stewart and Wm. Briggs. 176 pp. (Clive.) 2*s.*—This book has been prepared to meet the requirements of pupil-teachers who are taking elementary science in the Preliminary Certificate Examination. Those who are acquainted with the syllabus of this examination will remember that candidates are required to select one of several sections, in addition to the general section, which includes the simpler physical measurements, properties of matter, heat, and a few fundamental chemical principles. The volume under notice is well adapted to meet the requirements of pupil-teachers. A number of simple experiments, included in the text, are described in sufficient detail to allow the book to be used as a laboratory guide; and few of the experiments offer manipulative difficulties beyond the capacity of the average pupil. We notice that, once more, an experiment on the irregular expansion of water (p. 85) is described which must fail necessarily to convey the required information; it is strange that the considerable manipulative difficulties of an experiment designed to show this important physical phenomenon have been treated for so many years with so little respect in the several smaller text-books which have been published during this period.

A First Year's Course in Practical Physics. By J. Sinclair. viii.+124 pp. (Bell.) 1*s.* 6*d.*—Instructions are given for laboratory exercises dealing with length, area and volume, mass and relative density, the pressure of air and related subjects, construction and use of thermometers, and effects of heat. Instead of the usual tables of formulæ and constants, blank tables are printed at the end of the book, so that pupils may enter their own results. A test paper suitable for revision work is given at the end of each chapter. There is a family resemblance in most school-books now produced on practical physics,

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and the likeness between this and others is seen, not only in the style of the text, but also in such illustrations as those on pp. 6, 10, 21, 32, 43, 72, 80, and 83. But perhaps it is too much to expect decided originality in a book of this character. In any case, the course of work contained in the present volume is very instructive, and the directions are both concise and helpful.

Practical Exercises in Chemistry. By G. C. Donington. vii.+251 pp. (Macmillan.) 2*s.* 6*d.*—This work has been written so as to adapt the advantages of the modern "research" methods of study to the actual conditions of class-teaching in school laboratories, where of necessity the time which can be devoted to the subject is but short. To this end the instructions have been made as explicit as possible and the results to be expected in any exercise are given only in those cases where they are essential to the sequence of ideas in succeeding work. The volume is intended for use in ordinary secondary schools, its scope being sufficient to cover all the subjects included in the new syllabus in chemistry for the London Matriculation. Besides dealing with problems such as the rusting of iron, burning, interactions of acids and alkalies, &c., chapters are devoted to equivalent weights, carbon, nitrogen, sulphur and phosphorus compounds and to the investigation of some organic substances. The author, in his preface, admits the importance of encouraging self-activity on the part of the pupils, but justifies the issue of yet another elementary text-book as saving much valuable time to the teacher. In conclusion, the volume can be confidently recommended for school use.

Chemistry Lecture Notes. By G. E. Welch. 63 pp. (Blackie.) 1*s.* 6*d.*—This book is written from the point of view that much valuable time is wasted in note-taking, and it is quite the worst thing of its kind that has come under our notice. It consists in a succession of bare facts put down in the briefest possible form so as to be entirely destitute both of any sequence and of literary style and we should consider it a criminal act to put such a work in the hands of a schoolboy. Surely the whole point in elementary science-teaching in schools lies in training the pupil to observe facts and learn how to record what he sees in simple and clear language, and above all to cultivate the faculty of reasoning. But Mr. Welch prefers such statements as "$PbS+4H_2O_2=PbSO_4+4H_2O$ (oil paintings)," or "Lime burning. Kilns similar to blast furnace; fuel and limestone in alternate layers (4 of limestone to 1 fuel). Dampers to regulate supply of air"! Comment is superfluous. What good can chemistry taught on such a plan be to anyone? The volume is bound up with blank leaves intended for sketches and any additional notes.

Art.

The "A.L." Bold Outline Drawing Cards. Twelve cards (25 in. × 20 in.) with 24 examples, in cloth-backed portfolio. (Leeds: Arnold.) 10*s.* 6*d.* net.—As an adjunct of the natural history lesson, or as a means of correlating the natural history with the drawing lesson, these cards should prove most acceptable to the teachers of these subjects. The series consists of twenty-four studies of animal and bird forms, drawn in bold, simple outline, large enough to be seen fifteen or twenty feet away, and conveniently eyeleted for hanging or pinning to the blackboard. The diagrams have been drawn by a "skilful zoologist," who is, we fear, not always so successful in his draughtsmanship as he is, presumably, in his zoology; with few exceptions, however, the drawings are accurate and vigorous, and express in as few lines as possible some characteristic attitude of the bird or beast represented. Used in connection with the natural history lesson, they form admirable suggestions for note-book sketches, and they are sufficiently simple to serve as subjects for subsequent memory drawing exercises. Their value as drawing copies will be considerably enhanced in cases where the teacher is able to make supplementary sketches on the blackboard, suggesting methods of construction and treatment, and pointing out common sources of error.

The "A.L." Nature-drawing Cards. Two packets of cards 11 in. × 7 in., each packet containing 24 cards. (Leeds: Arnold.) 2*s.* 3*d.* each packet, net.—These cards strike us as not being quite so happy in conception as the set referred to above. The drawings are similar in subject and execution, but are printed on cards 11 in. × 7 in., and are intended for distribution among the class, each pupil in consequence having a different copy. This arrangement would not only make the task of supervision and correction extremely difficult, but it would also entirely preclude any possibility of collective teaching, thereby entailing considerable waste of time. As a recreation, or a change from the customary drawing copy, they may be relied on to keep a class occupied for an hour or so—for what child does not love to draw an animal?—but they can hardly be considered as a serious contribution to the material of the drawing lesson.

Miscellaneous.

The Life and Experiences of Sir Henry E. Roscoe, F.R.S. Written by Himself. Pp. xii.+420. (Macmillan.) 12*s.* net.—Sir Henry Roscoe has played so many parts in his life that this autobiography should appeal to a wide circle of readers. He occupies a position of distinguished eminence in the world of science, has assisted greatly the advancement of chemical industry, represented South Manchester in the House of Commons from 1886 to 1895, was a pioneer of technical education, and is still an advocate of the claims which it and other branches of secondary education have upon the resources of a modern State, took a leading part in the foundation of the Lister Institute of Preventive Medicine, and was largely responsible for the reorganisation of the University of London, of which he was Vice-Chancellor for six years. This is not the place to attempt a survey of a career so varied and full of usefulness as that of Sir Henry Roscoe, but reference may be made to a few points relating to education. It is pointed out that if our educational system encouraged originality instead of repressing it and often destroying it by examination grinding, the innate creative power of the Anglo-Saxon blood could easily keep us in the van of progress. But the people of Great Britain neither understand nor believe in education. Here we think £12 per head of children instructed an excessive price for an elementary school, but there is an elementary school in the Lindischer Platz, Zurich, which costs £66 per head; and by far the larger proportion of the taxes in the Canton of Zurich is spent on education. The encouragement of secondary education is our most urgent need at the present, but politicians are too much concerned with sectarian difficulties in primary schools to pay any attention to the matter. It is necessary to read Sir Henry Roscoe's record of his life and experiences to understand the great influence for good that can be exerted by a single citizen who has tact, knowledge, and the instinct which uses the best experiences of the past as stepping-stones to progress. The book is full of interesting reminiscences, and will be

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read with pleasure by students and teachers concerned with science and education.

How to Teach the Bible. By the Rev. A. F. Mitchell. 1–68 pp. (University Press of Liverpool, and Williams and Norgate.) 1*s.* 9*d.*—We turn to the last page to see what books Mr. Mitchell recommends, and we find that in every case they are literary or ethical. The historical teachings of the Bible are in this list neglected; and the spiritual teachings are enforced. No doubt this should be so; but how is the child to be interested in the Bible if Samuel, Judges, and Exodus (we take the author's instances) are to be shunned? The book is a collection of lectures, and it is full of useful thought. But, at the risk of offending, we may reiterate what has before been said in this paper. We do not teach the Bible well because we do not know it, study it, or like it. At present we are afraid of it. The new thought about the Bible has not yet reached the minds and hearts of the teachers of England; and the older thought is moribund.

Jesus. By A. Neumann. Translated by M. A. Canney. 1–175 pp. (Black.) 2*s.* 6*d.*—This is, we suppose, an advanced book. The historical Jesus is sought for, and as a result the "legends" of the birth, boyhood, miracles, are laid aside, along, of course, with the resurrection and the ascension. If anyone cares to know what the progressive school think of the gospel story, this book will enlighten him. The whole tone of it is reverent and simple, from beginning to end. The book does not deny immortality, and accepts, in its own way, the Risen Christ at work in the world of to-day.

Child Life in our Schools. By M. A. Brown. 1–136 pp. (Philip.) 3*s.* 6*d.*—This is a good and full book by an enthusiast. Time-tables, with lucid explanations and directions of all sorts, leave the reader never in doubt; but, so far as we see, such subjects as finance, the management of health, the choice of teachers and the requirements made of them, are not touched on. There is nothing new in the book to the enthusiast; but enthusiasts will not ask themselves: "Can *my* system, which works so well with *me*, be adapted to the poor, the ill-fed, the unwashed, the overcrowded, and the overworked?" Circumstances do not alter cases; they are cases.

National Education and National Life. By J. E. G. de Montmorency. 1–288 pp. (Swan Sonnenschein.) 3*s.*—Rarely does one come across a book with so clear a grasp of an educational (primary) system. It bristles with knowledge felicitously shown. Absolutely fair, it speaks in the most stirring way for the religious background of education. But it scarcely sees light through the darkness. All that is said on school libraries, on the education of the very poor, on school nurseries, is excellent; but it takes no account of the great retarding influences that always prowl after the army of teachers. Men and women dislike good literature; they dislike art; they do not want to be improved into angels. They love gambling; many cannot exist without drink, and their motto is not Excelsior. We are the product of an earlier generation, and we are slowly correcting that generation's mistakes and making fresh ones for others to correct. The author barely touches on our *real* difficulties; is he afraid of mentioning them?

George Buchanan and his Times. 1–96 pp. (Edinburgh: Oliphant, Anderson and Ferrier.) 1*s.*—A brightly written, well printed, and copiously illustrated account of the great scholar. It is reduced from the larger life by the author, Mr. P. Hume Brown.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Is School Science Worth Having?

THE fact is often deplored that so little is done in our schools to teach the art of reading: the vituperative commentaries emanating from East Ham and Longton on my recent article, if not most of the letters it has called forth, afford clear proof of inability to read; even my friend Mr. Donington misrepresents me altogether, for example, as recommending that at school no facts should be learnt save those which scholars acquire from their own practical work. My contention was and is, simply, that far too little is being done in schools to teach the experimental method *properly*. To fly into tantrums over so solemn a question as that I have asked is, to say the least, mere waste of energy. The evidence is overwhelming that very few teachers have learnt to appreciate the fundamental importance of method; nor is this surprising in view of the fact that nowhere is the attempt made consistently to give thorough training in method.

I might have put my question on a far broader basis by asking: "Is School Education worth having?" My conclusion would have been to the same effect; but I thought it better to be constructively critical and to deal with my own special subject. The motes in the eyes of teachers generally may be sufficiently apparent but the beam in my own concerns me most; I am still determined to do all that in me lies to reduce its size, anathemas notwithstanding. Nevertheless, to repeat words I used at Belfast, quoted from Oliver Wendell Holmes: "I don't want you (teachers) to believe anything I say, I only want you to try to see what makes me believe it." I know what the effect will then be. Penitence must come.

And in complaining of the rate of progress I am not alone. In the article on Waste in Higher Education in his book on "The Trend in Higher Education," the late Dr. Harper, president of the University of Chicago, points out that "the introduction of science studies in the high schools and academies does not seem to have produced any serious impression. The fact, however, seems to be that the advantage gained from the prosecution of science studies has not counteracted the disadvantage which follows from undertaking work in a greater number of subjects. In secondary work, dissipation is the order of the day and dissipation is only another term for waste. The effort to give the student a little knowledge of many subjects makes accuracy impossible and consequently renders inevitable a great waste. . . .

"The one habit upon which more depends than on all others is the habit of accuracy. It is, of course, true that some minds are entirely incapable of acquiring this habit. It is, nevertheless, a habit which may be gained to a greater or less degree by careful cultivation; and every mental effort, according to its character, will lead to the development of accurate habits of thought or to the opposite. The boy in the training school is compelled to learn accuracy or inaccuracy. Language cannot describe the incalculable waste involved in the cost to society in the case of every individual whose training fails to secure for him this accuracy. The whole future life of the man is involved."

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How many teachers realise that this is the case?

To be of any use, these discussions must be carried on in a serious and relevant manner—some attempt must be made among us to develop the spirit of Bushidō. Lord Redesdale, in his account of the Garter Mission to Japan, makes an interesting reference to a meeting in Tokyō of the Cambridge Society, a society of Japanese gentlemen who have been at our English universities, all of them distinguished men who have made their mark. Speaking of their attitude when at college, he says: "They do not waste their time, these Japanese students; they are no milk-sops and are ready enough to play their part in any game, whether of war or peace. But when they work they work and education is to them something as sacred as religion itself." We need to have a little of this spirit infused into us. Nothing is more surprising than the critical capacity the Japanese have shown in selecting the essential elements of success from western civilisation: why cannot, why do not, we show greater capacity in selecting from the mass of material at hand the essentials of progress?

The Gilbertian Pooh-Bah represents a very human and lovable type; and the pedagogic Pooh-Bah has a certain future; water-tight compartments must inevitably disappear from schools as these become rational institutions.

We do not cultivate truth sufficiently in our schools. What we are pleased to call the development of character eventuates in the universal habit of turning up the ragged seams of our trousers as a pretentious badge of gentility. How can true character be developed in a youth who insist on bearing such an outward and visible sign of lack of mental independence?

In this connection, it were well to remember Emerson's pregnant words: "God offers to every mind its choice between truth and repose. Take which you please, you can never have both. Between these, as a pendulum, man oscillates. He in whom the love of repose predominates will accept the first creed, the first philosophy, the first political party he meets—most likely his father's. He gets rest, commodity and reputation; but he shuts the door of truth. He in whom the love of truth predominates will keep himself aloof from all moorings and afloat. He will abstain from dogmatism and recognise all the opposite negations between which, as walls, his being is moving. He submits to the inconvenience of suspense and imperfect opinion but he is a candidate for truth, as the other is not; and respects the highest law of his being."

A scientific worker must ever submit to the inconvenience of suspense and imperfect opinion—the love of truth must dominate him. This is the message of science—the reason, perhaps, of its unpopularity among the schoolmen.

Mr. Brett will understand from this why I attach such importance to experimental studies as a means of moral training and why I have taken such exception to the slovenly ways in vogue of imparting the instruction. Tennyson's well-known lines may be taken as an embodiment of the philosophy of the truly scientific worker:—

> "Flower in the crannied wall,
> I pluck you out of the crannies;—
> Hold you here, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all and all in all,
> I should know what God and man is."

Surely no slight force as moral training may be conceded to discipline of which the ultimate effect can be thus depicted. But I should be the last to say "Yes" to Mr. Brett's question: "Can all that we require in character be formed by an inductive process of experimental research, however well directed?" Neither can this be accomplished, however, through any other single branch of school work; to such an end, all subjects must be made to co-operate.

If we apply the touchstone of truth to our teaching, we cannot, in the long run, go far wrong: but, oh! the difficulty of it!

HENRY E. ARMSTRONG.

Modified Experiments in Chemistry and Physics.

Determination of the Equivalent of Sodium.—In many laboratories experiments involving the use of sodium are severely left alone, on account of the danger which has been found to accompany such experiments. It seems a pity, however, to neglect such an interesting and typical experiment as the determination of the equivalent of sodium by its action on water and subsequent measurement of the hydrogen produced. Although the following method has been in use in the laboratories here for the last two years, I have not yet had any untoward incident occur.

A 50 c.c. tube graduated in tenths of a cubic centimetre is used for the collection of the hydrogen (Fig. 1). It is essential that the tube should be full of water; no small air

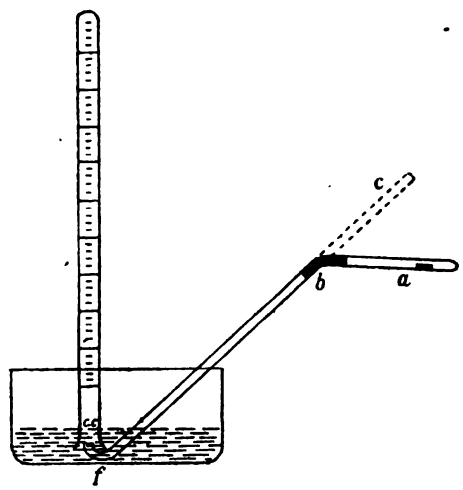

FIG. 1.

bubbles must be present. The weighing tube *a* (made by closing up one end of a piece of glass tubing of 6 mm. internal bore) is fitted with a piece of indiarubber tubing and a pinchcock. Its weight is obtained, and then about 0·05 gram of freshly cut sodium, shaped so as to pass into the tube easily, is introduced, and the whole weighed accurately. The pinchcock is removed, and the weighing tube is fitted on to the delivery tube (of the same internal bore) at *b*. Keeping the weighing tube horizontal so as to prevent the sodium from running down the tube, the end of the delivery tube is brought under the water in the glass basin. Allow the bubble of air to escape from the end of the delivery tube, and then bring it under the mouth of the graduated tube, as in the illustration. The weighing tube is now brought up into the position *c*, when the piece of sodium runs down the delivery tube and round the bend up into the water contained in the graduated tube. The level of the water in the delivery tube at *f* remains constant. It is important that the delivery tube should be thoroughly dried out before each determination. The fol-

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lowing example is the result of an equivalent determination carried out by one of my students :—

Weight of tube + pinchcock + sodium = 15·887 grams.
" " " alone = 15·845 "

∴ Weight of sodium taken = 0·042 "
Temperature of water in basin ... ... = 12·6° C.
Height of barometer ... ... = 737 mm.
Volume of hydrogen evolved ... ... = 22·4 c.c.
Pressure of water vapour at 12·6° C. ... = 10·8 mm.
True pressure on the hydrogen = 737 − 10·8 = 726·2 mm.

Correcting for temperature and pressure :—

$$22\cdot4 \times \frac{273}{285\cdot6} \times \frac{726\cdot2}{760} = 20\cdot46 \text{ c.c.}$$

1 c.c. of hydrogen at N.T.P. weighs 0·0000896 grams.
∴ 20·46 c.c. " " weigh 0·0000896 × 20·46 = 0·001833 grams.

0·001833 grams of hydrogen are liberated by 0·042 grams of sodium.

∴ 1 gram of hydrogen is liberated by

$$\frac{0\cdot042}{0\cdot001833} = 22\cdot92 \text{ grams of sodium.}$$

Determination of the Coefficient of Absolute Expansion of a Liquid.—The ordinary laboratory method of determining the coefficient of absolute expansion of a liquid by means of the dilatometer is a process involving manipulative skill on the part of the student, and is not an experiment calculated to give a satisfactory result in the hands of a junior student. The following modification of the determination, with reasonable care in the manipulation, gives very tolerable results. The accompanying diagram shows the method and apparatus required. The graduated tube may be the ordinary 50 c.c. gas tube divided into tenths of a cubic centimetre. About 10 c.c. of, say, absolute alcohol are introduced into the dry graduated tube by means of a long thistle funnel, so as not to wet the sides of the tube, and a plug of cotton-wool is inserted in the open end of the tube in order to minimise the evaporation of the alcohol whilst the experiment is being performed (Fig. 2). A thermometer is attached to the graduated tube by means of two rubber rings cut off from a piece of indiarubber tubing, and the arrangement is then fixed in a beaker of cold water standing on a sand-bath supported by a tripod. The water is well stirred, and the temperature of the bath and the volume of the alcohol are read off simultaneously. A lens helps considerably in the readings. Heat is now applied to the water (which is kept well stirred) by means of a rose burner. When a temperature of about 60° C. is reached, the temperature and the volume of the alcohol are again noted. From the data thus obtained the coefficient of apparent expansion of alcohol in glass can be calculated, and since the coefficient of absolute expansion of alcohol is approximately equal to the coefficient of apparent expansion of alcohol in glass, increased by the coefficient of cubical expansion of glass, it is easy, knowing the value of the latter, to obtain the real or absolute expansion of the alcohol. The following example is the result of an experiment performed by a junior student in the school laboratory :—

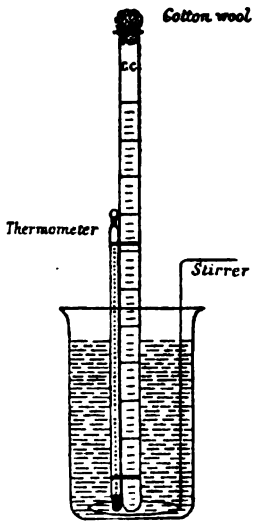

FIG. 2.

Volume of alcohol after heating ... ... = 10·40 c.c.
" " before " ... = 10·00 c.c.

Total expansion of alcohol ... = 0·40 c.c.

Temperature of bath after heating ... = 58° C.
" " before heating ... = 20° C.

Rise in temperature ... .. = 38° C.

Since 10 c.c. of alcohol expand 0·40 c.c. through 38° C.

Then 1 c.c. " " $\frac{0\cdot40}{10 \times 38}$ c.c. " 1° C.

$= 0\cdot0010526$ c.c.

Coefficient of apparent expansion of alcohol in glass = 0·0010526
" cubical " glass ... ... = 0·0000258

∴ Coefficient of absolute expansion of alcohol between 20° C. and 58° C. ... ... = 0·0010784

The coefficients of absolute expansion of other liquids may be obtained by this method, the most suitable liquids being benzene (0·00138), petroleum (0·00099), and turpentine (0·00105).

E. T. BUCKNELL.

St. Philip's Grammar School, and the Oratory School, Birmingham.

Modern Experiments in Education.

WE ask you to allow us to draw attention through your columns to a valuable educational experiment which has been going on long enough now to establish a definite result, and we venture to think is deserving of attention from all those who are interested in the advance of education in this country.

About fifteen years ago Miss Mason, of the House of Education, Ambleside, began to organise the teaching given in private schoolrooms with a view to raise the standard of the work done to that accomplished in the best schools. The machinery by which she has achieved her purpose has been very simple. She has trained a certain number of governesses at Ambleside on her own lines, but she has not confined her work to their schoolrooms. A suitable time-table and scheme of work in four grades may be had by any member of the Parents' National Educational Union under certain conditions, and the 500 schoolrooms that have adopted her scheme form what is known as the Parents' Union School. The experiment to which we allude has been carried out in this "school" for fifteen years, and its success has led Miss Mason to submit her results to the profession with a view to their wider adoption. We are among those whom she was good enough to invite to a conference held at the House of Education at Whitsuntide, and we desire to record our sense of the value of her experiment as regards the literary side of a child's education.

The curriculum of the Parents' Union School is very wide, and includes all the subjects ordinarily taught in schools, besides hand-work and physical exercises. The originality lies in the methods of work prescribed by Miss Mason with regard to "English subjects." Miss Mason bases all humanistic work on a study of history, and from the earliest age devotes much time to it, demanding, from the first, independent study on the part of the child. The books he is to use are selected with the greatest care;

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mere text-books and readers are discarded, and those of living interest chosen. Miss Mason allots a certain portion for the study of each class each term; the child reads part of this daily in lesson hours, and the teacher's function is confined to directing the work, inspiring interest, and setting some test that demands reflection, *e.g.* calling on the child from time to time to narrate something of what he has read. During the term a great deal of ground is covered, and towards the end a few test questions sent by Miss Mason are answered, children who are too young to write dictating their answers to others. Some hundreds of these answers were submitted to us for inspection, and we are of opinion that they bear out Miss Mason's belief that her system has succeeded:—

(1) In forming habits of concentration and of independent study at an early age.

(2) In overcoming to a large extent the difficulties of English composition and spelling.

(3) In imparting a considerable amount of knowledge of various kinds.

We watched a small school at work on Miss Mason's system, and discussed freely with her various questions that were raised. Her testimony was supported by those present who, as parents or teachers, had personal knowledge of the work, and in particular by the headmasters of two preparatory schools who have adopted the Parents' Union scheme for their lower classes.

Detailed information may be obtained from the hon. secretary, Mrs. Franklin, 50, Porchester Terrace, London, W.

(Signed) W. C. Compton, Headmaster, Dover College; B. Field Hall, Principal, High Cliff School, Scarborough; Margaret I. Gardiner, Headmistress, St. Felix School, Southwold; Ethel Gavin, Headmistress, Notting Hill High School, London, W.; C. H. Gibbs, Principal, Sloane Street Preparatory School, S.W.; Cecil Grant, Headmaster, Keswick School; Bertram Hawker, Member of Education Committee, South Australian Government; F. Hawkesworth, The Vicarage, Ambleside; Lionel Helbert, Principal, West Downs Preparatory School, Winchester; S. Heron, Headmistress, Wyggeston Girls' High School, Leicester; Julia F. Huxley, Principal, Prior's Field, Godalming; Cyril Jackson, formerly H.M.C.I.; L. Kjellberg, Principal, Fridhem, King's Lynn; C. Lowry, Headmaster, Sedbergh School; E. R. Murray, Lecturer, Maria Grey Training College; Claude H. Parez, formerly H.M.C.I.; Mary Wolseley Lewis, Headmistress, Church of England High School, Eaton Square, S.W.; E. Woodhouse, Headmistress, Clapham High School, London, S.W.; J. Wynne Edwards, Headmaster, Leeds Grammar School.

The Seven Sevens.

I send you herewith a solution of the interesting problem which appeared in last month's School World, and I have given with it, in some detail, the process of reasoning by which the result was reached.

(1) Since multiplication of the divisor by 7 gives 6 figures in the product, while the 2nd and 4th multiplications give 7 figures, the divisor must begin with 11, 12, 13, or 14, and the 2nd and 4th figures of the quotient are 8 or 9.

(2) Since the product of the divisor multiplied by 7 has its 2nd digit 7, it is found by trial that the divisor must begin with 111, 124, 125, 138, or 139.

(3) The 3rd remainder must evidently begin with 10, and therefore also the 4th product begins with 10. Hence either divisor begins with 111, and 4th figure of quotient is 9, or divisor begins 125, and 4th figure of quotient is 8.

(4) But if 9 were the 4th figure of the quotient, then, since the product has its 3rd digit from the right 7, the divisor would require to begin with 11197, which would make the product by 7 have an 8 in the 2nd place instead of a 7. Hence the 4th figure in the quotient is 8, and the divisor begins with 12547, the 6th figure being less than 5.

(5) Since the 3rd product (by 7) begins 878, and the line above cannot be greater than 979 . . . ., therefore the remainder begins 101; and since the 4th product begins 100, therefore the last remainder begins with a 1, and the last figure of the quotient must be 1.

(6) On trying 4, 3, 2, 1 in succession as 6th digit in the divisor, and working the division backwards, it is found that the 2nd of these alone satisfies the conditions not yet considered, and that the following is the full division.

```
1 2 5 4 (7) 3 ) 7 3 (7) 5 4 2 8 4 1 3 ( 5 8 (7) 8 1
              6 2 7 3 6 5
              -----------
              1 1 0 1 7 (7) 8
              1 0 0 3 7 8 4 .
              -------------
                9 (7) 9 9 4 4
                8 (7) 8 3 1 1
                -------------
                1 0 1 6 3 3 1
                1 0 0 3 (7) 8 4
                ---------------
                      1 2 5 4 7 3
                .     1 2 5 4 7 3
                      -----------
```

J. W. Reid.

Drummond Villa, Inverness.

[Solutions have also been received from the proposer of the problem and from J. L. Miller, of Nottingham High School.—Editors.]

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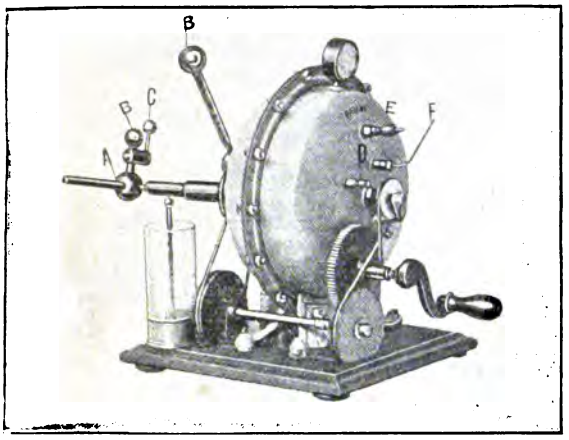

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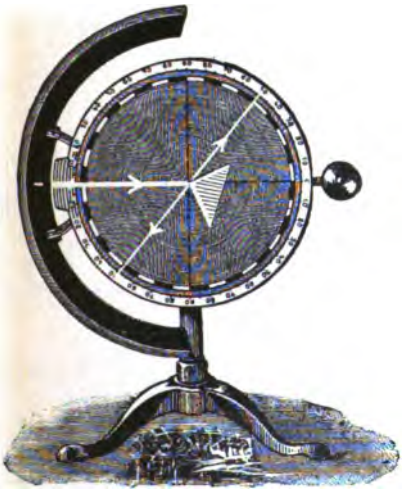

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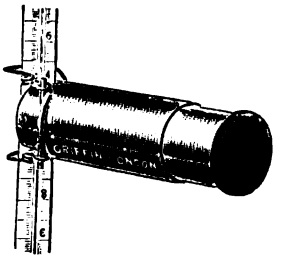

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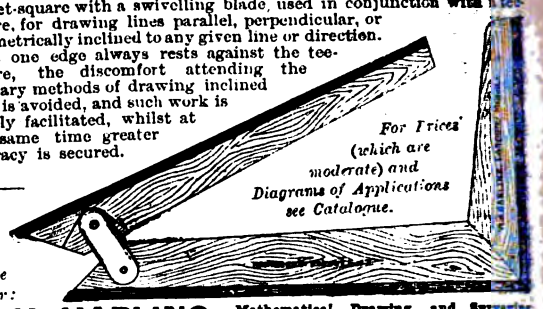

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THE CURRICULUM OF SECONDARY SCHOOLS.[1]

By the Hon. and Rev. E. LYTTELTON, M.A.

IT is not unusual for writers of papers to begin with various reflections on the surpassing importance of the subject with which they are going to deal. But I am constrained to do the opposite by the hope of keeping the discussion free from the feverish tone of controversy with which it is often pursued. One gets to believe less in controversy as life goes on, and to agree more and more with Dr. Westcott that controversy nearly always is concerned with details. And when the controversialist discerns this fact his excitement is allayed and reason has a better chance of being heard. Thus we may, I think, refuse assent to the prevailing opinion that a subject which is provocative of controversy is necessarily, and for that reason, of first-rate importance. Anyhow, nothing but good can come from an honest attempt to recognise the proportion of things in an educational subject such as the curriculum of studies in secondary schools.

First, then, let us notice that while at the present day we are coming to believe in education as the harmonious training of all human faculties, the curriculum of studies is concerned with the intellect alone; and though intellectual training is a very interesting division of the whole subject, yet it is only a division; a fact worth recalling when we think of our strange want of success in it as compared with physical and even spiritual training, anyhow in this country.

Secondly, curriculum questions only concern a portion of this division. The human intellect is trained by a great many other influences than the particular order of the subjects it is made to study, and there is no reason to suppose that these other influences are any whit less potent than the order and selection of subjects in determining the quality of the mental powers and interests which finally result. I mean this. If you contrast the curriculum of subjects taught in the seventeenth century with those taught nowadays in a progressive modern school, the difference is enormous; but the resulting mental qualities are strangely similar. To hear some disputants talk one would imagine that the choice of subjects was everything. But facts seem to show that it is only one among many influences, and by no means the most important. Are we not learning to-day that environment is more potent in the formation of character than heredity? If so, how much more, then, than curriculum? Some such consideration as this may explain how it comes about that many men who have never studied the grammar of any language yet express themselves well; and others who have never worked in a laboratory yet do understand the laws of evidence and can somehow reason pretty straight. For a very long time yet it must remain uncertain how far the selective and assimilative powers of a young mind can extract good nourishment out of a subject which seems at first barren and uncongenial; and in so far as it does so, who knows how much of the result is due to the subject as compared with the teacher, or with the home influence, or the school environment, or heredity?

Now all this seems to point to the conclusion, dear to the hearts of many Englishmen, that it does not really matter much what you do. But we know far too little to say that much; and even if the effect of curriculum be less than is sometimes supposed, that is no reason why we should shirk the task of making it as good as we can. To do that we must take account of one or two laws of mental growth, and bring them into relation with the kind of training which different subjects tend to encourage. We must be a little psychological, and ask first what we know about the development of human faculties in the young. In laying down certain simple principles before coming to practical recommendations, I am hopeful that critics may be able to discern the exact reasons of any divergence that there may be between their own views and mine. In the interests of profitable discussion, I hold it to be absolutely necessary to explain latent assumptions instead of leaving them to be guessed at, and to avoid urging a single recommendation without making fairly clear the principle on which it is based.

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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There appear, then, to be two or three leading principles which we must have in mind. First, that certain faculties develop in the young human being before others, the power of acquiring knowledge of facts before the power of reflecting on them. Next, that there is such a thing as a natural transition from the one stage to the other, which takes place in the majority of cases at approximately the same age, between fourteen and sixteen. If we did not believe this statement to be somewhere near accurate, we could not hope for any rational system of education. As it is, we instinctively act upon it to a certain extent; but it is worth pointing out that there is a permanent danger of our violating the principle by making premature appeals to the reasoning faculties, that is, of insisting on conclusions being drawn before the facts have been patiently and thoroughly gathered. A young teacher has a keen appreciation of the pleasure afforded by the exercise of the reasoning powers in their early stages, say at seventeen; and it is very difficult for him not to suppose that this pleasure might have been anticipated in his own case, if his teachers had been more enlightened than they were. It is true that nature protects boyhood from this peril by yielding constant and reiterated proof of the reasoning faculties being in a completely dormant condition, but we all know how to misinterpret these indications, and to regard them as proofs of the incompetence of the teachers who had charge of the boy before ourselves. This is a vicious inference often drawn from what we call "howlers." I believe "howlers" to be sent to us primarily for our recreation in hours of drudgery, but also for our instruction, teaching as they do the utter uselessness of trying to hurry Nature in her developing process by anticipating a later stage before the earlier has been rightly employed. Therefore facts are to come before reflections, the drudgery of collecting facts being greatly relieved by the natural vivacity of the wish for knowledge during the years of childhood to about fourteen years of age.

Thirdly, we are to aim at a harmonious development of faculties; that is to say, certain kinds of mental exercise obviously train different faculties from other kinds; and no matter how great the precocity in some faculties, or the backwardness in others, the training ought to be even, not aiming at dazzling performances in one line of activity unless there has been thorough and adequate effort given to other activities. We notice how this idea is modifying our conception of physical training. Nowadays the most scientific form of bodily exercise aims at leaving no muscles uncultivated, but it does not aim at such one-sided development as seems necessary if onlookers are to be captivated by brilliant achievement. I have not time to justify this assumption by argument, but merely mention that in making recommendations I am taking its soundness for granted.

Fourthly, it is assumed that many brains are incapable of full development unless they are exercised by delicate hand and eye work.

Fifthly, we must make quite clear which of two ideals we have before us: the awakening of a strong desire to learn, or the equipping with a certain minimum of knowledge supposed to be indispensable at a certain age, say nineteen or twenty-two. It is idle to upbraid a teacher because his pupil is ignorant of certain things at nineteen, when the teacher's aim has been not to equip but to inspire: not to ensure a fair acquaintance with many subjects, but such a grip upon a few that as long as life continues the mind will strive towards an increase of light. Again I cannot argue for one as against the other, but must simply state my preference for the principle of inspiring rather than of packing. In other words, I hold that, however difficult it be to carry out, we are to aim at guiding our pupils through mental activities which, owing to their conformity to Nature, shall in the main be joyous, not at all because they are free from effort, but because the effort is constantly rewarded with a sense of growth. Thus, at whatever age school training may cease, we must try faithfully to plant the wish to go on learning; feeling that though at twenty-two years of age an English youth may be surprisingly ignorant, yet he ought to feel the difference between knowing and not knowing, and the joy which accompanies knowledge, though every step forward means effort not free from pain.

Next, we may be guided by the belief that similar subjects such as languages exercise to some extent the same faculties, but that this is less the case if they are taught in different ways and with different aims. It is possible to teach a language so that the faculty principally exercised is memory; but another way of teaching it may bring the reasoning power into play, or the appreciation of literature, or the cultivation of the ear, or of the vocal organs in making vowel sounds. Here, therefore, curriculum questions depend on methods adopted. You cannot infer from a glance at the time-table that languages are being studied to excess, unless you also know how they are being taught. Now let us apply this remark to Latin, Greek, and French. I suppose we have all taken part at various times in the singularly barren disputes as to the comparative merits of Latin and French, or of classics and modern languages. But we forget that the main fact to bear in mind is the strong probability that, if taught in similar fashion, French will train and fail to train exactly the same faculties as Latin—that is, memory, then reason, then perhaps composition. But if Latin is taught as it commonly is, it gives all that a language can in the way of gymnastic, while it fails in training the ear, and its literature, for boys at least, is never first-rate. Exactly the same may be said of French, unless we teach it in the modern fashion, that is, by constant appeals to the ear, when a further object comes into view, viz., to

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cement concord between us and our allies by improved means of communication. Thus, if Latin is kept mainly as a gymnastic, French is useful, if taught phonetically, in training good pronunciation and saving the English vowel sounds from degradation. But Greek gives what both the others fail to give—a literature quite ideal for the young human being. Every rightly constituted boy and girl must love the Odyssey; also Herodotus, and, later on, Plato, a few plays, and perhaps Thucydides. Thus the three languages need not overlap, but, if not, a good deal of trouble must be given to the methods of teaching them. In particular, as regards Greek, everything must conduce to teaching reading; as regards Latin, to writing; as regards French, to training the ear. But at this point another most necessary distinction must be made.

I hope we all agree that boys' linguistic powers vary enormously, and from those who are slowest in acquiring the rudiments of languages it is idle ever to expect literary appreciation of anything except, perhaps, of the English translation of the Odyssey, and some English ballads and stories; but it is not idle to expect good results from linguistic gymnastic training, nor from training of the ear. Now, from those who are less slow, but still far from quick, the lower class of those whom we call average boys, the literary appreciation may be expected if the appeal is very carefully made; in other words, if the attempt to give a scientific knowledge of the language is frankly abandoned—if composition in it is not attempted, but if everything is subordinated to teaching rudiments just so far as to make the reading of Homer in the original a little more profitable than it would be in a translation. People will differ as to how far that is, and also as to with how many boys in a group this attempt should be made. But I am convinced of one thing: the laborious effort to teach average and dull boys Latin and Greek *on the same lines exactly—i.e.* by wobbling feebly between two aims, both impossible, the scientific grasp of the languages, their structure and syntax, and so forth, as well as the literary appreciation:—this effort, I say, pursued, as it has been, with splendid zeal and conscientiousness and self-devotion, is a monumental fact in the history of human stupidity. I cannot see that the world would be any the poorer if it were relinquished. But observe; there are two ways of relinquishing it. You may either discontinue one of the languages, or greatly modify your methods of teaching it. For my part, I hold that, excepting the manifestly incapable, all boys in secondary schools ought to be given the chance of learning how to spell out the Odyssey of Homer, and that for many of them this should cease at sixteen and not be begun till thirteen. But before anyone can agree to that, he must believe that the number of necessary subjects is, after all, not large.

Now we can proceed to the consideration of different subjects, and it will be remembered that the air is clear of questions of professional careers and of the age at which schooling ends. We must not concern ourselves with the thought that this or that subject will be useful for this or that profession, because the attempt to meet at school different professional needs is perfectly hopeless, but may easily upset our time-tables, and, what is worse, degrade our ideal. Among all the imbecilities of our recent educational history perhaps there is none more baneful than the attempt to give boys what is professionally useful with the hope that their idea of knowledge will remain lofty and disinterested meantime. I confess I look with deep disquiet on the action of examinations in this respect; but if to this you add the element of £ s. d., all hope of fostering the love of knowledge for its own sake is fairly shattered; and I am afraid that the proof of this assertion is to be found in our marvellous system of training cadets for Sandhurst. But this is a digression.

So far, then, we have been considering principles, and have gently wandered into the region of practice. I would finish the subject of language by saying that the use to be made of English in the early years up to fourteen should be twofold: first, to learn good ballads by heart; secondly, to use it as a means of comparative analysis, the language selected by way of contrast being either Latin or French. It would be very easy to recommend what would be most desirable, viz., that every child should enjoy the benefit of a French nurse. But are we prepared for a huge influx of French nursery-maids? And supposing, what must be true, that many households could not afford it, your whole curriculum in regard to French is spoilt. The same result would follow if the nursery-maids refused to come. Of course, for purposes of talking French, the language ought to be mainly taught in early childhood, else there is danger that the adult, when he speaks French, will fail to obtain an intelligent hearing, and his speech will edify himself alone, and perhaps will fail to do even as much as that. But let us avoid analysis of English by itself. It should certainly be learnt through comparison with another tongue.

As to science, I sincerely hope we are agreed that it trains the mind in an indispensable way, but in a way different from language. Probably we have wasted many thousands of pounds on equipment. My belief is that very simple instruments suffice for a good teacher of young boys, and that laboratories should be reserved for specialists above sixteen years of age. But a headmaster who tried to act upon such a belief would be called an utter barbarian and a fossilised obscurantist, and so on. To avoid such a fate, the harassed authorities have instituted in past years a system of science lectures to large classes, which, of course, have very little connexion indeed with what is called science teaching. The function of a science lecture is not to teach boys to think or to observe any more than to use

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their hands, but simply to convince them that if they push on far enough and persevere through difficulties, they will reach to portions of the subject which are nothing short of fascinating. I have read in an economical treatise that the use of luxurious living lies in the stimulus it gives to the proletariat to work hard in the hope of some day doing likewise. We may hope the economist was wrong, but the theory serves as an illustration, and, however questionable may be the effects of luxurious display on the morals of the poor, there need be no doubt about the good of a science lecture, provided there is no confusion between a mild stimulus to endeavour and endeavour itself. In childhood, then, there ought to be glad gathering of facts without any addition of what boys call "jaw," by which I mean that if Mrs. Boole is right we still spoil an immense amount of scientific and mathematical teaching by introducing principles too early. It appears that there are ways thoroughly well adapted to children of giving a knowledge of elementary facts, not only of natural science, but also of geometry and conic sections, without departing in the least from the natural order of mental development, and without spending much money, this latter being a subject which will intrude itself at intervals in this discussion. There should be, then, science mixed with literature before sixteen, and even after, when specialisation has begun, neither subject should be pursued in isolation from the other.

There remains a hotch-potch of subjects, each of which has its own noisy advocates: English composition, geography, history, German, music, handicraft, gardening, rifle shooting, and a goodly batch of others. If a reader of a paper is heard to say that one of these ought to be postponed or pursued only in play hours, he is at once denounced as retrograde. But the question is not whether the subject is in itself interesting, nor whether it has evoked the faculties of our critic in his earlier years better than any other, but what is possible, and what is most desirable of the many alternatives.

I could easily deliver a long and moving encomium on each of these subjects of study, without, however, advancing the consideration of the question in hand by one single inch. There is no doubt whatever that when taught by the right man in the right way any one of this list of subjects might become an instrument of intellectual development; but how if the right men cannot be found and the right way is not known? I will therefore only give as my personal opinion that of the above-named subjects, and in view of all else that we teach, there are three which seem to me quite essential, and in this order: music, English composition, and geography. I would suggest that we might do more to foster history reading out of school, which would not fail of its object if only our teaching did not so often damp the wish to learn instead of kindling it. And to anyone who thinks or says that this idea is ridiculous I will only say that I envy him his power of being very positive in a difficult question.

To sum up. These recommendations assume, as I have said, certain principles. They rest on the hope that utility, when that word simply means £ s. d., may be wholly put aside in a discussion of this sort, and even if that should be found to be Utopian, we certainly are wise in trying first to determine the needs of mental training, before we allow materialism to make havoc of our ideas. One more principle has been adopted, that of placing a sufficient variety of subjects before a young boy to test his individual tastes, sixteen being roughly chosen as the age when mainly those tastes ought to be followed. Of course it will be said that too many subjects are retained, and there is no cry in education quite so clamorous as that which calls for a lightening of the curriculum. But a cry which is taken up in all quarters at once generally contains an ambiguity in its meaning; and it is rather silly for us to go on shouting "Lighten the curriculum," and then for everybody to insist that, of course, his own subjects shall be retained. There is a growing feeling that we fail in thoroughness, but if you throw a lot of subjects overboard you don't make sure that those which are retained shall be thoroughly learnt, but you do make sure that in regard to subjects discarded the pupils shall for a time be thoroughly ignorant. This is not a blessing in itself, unless it means that the pupils' minds are being really nourished by other pabulum so well that they are sure to attack the discarded subjects as successfully as nature allows when they are a little older. In other words, the problem is not solved by giving time to a subject so well as by well-considered methods; and the methods to be adopted in teaching one subject A depend quite as much on the prominence in the curriculum of B, and the objects aimed at in teaching it as on the requirements of A itself. This is not simply discarding, but it means correlation—that is to say, the patient effort to secure that the object of each study shall be clearly seen, and then fitted into a scheme which contains other subjects with other aims. Into this region of educational science we have only made a very slight advance.

THE SECONDARY-SCHOOL CURRICULUM AND THE TRAINING OF TEACHERS.[1]

By ARTHUR C. BENSON, M.A.

IN offering a few considerations on the subject of the Secondary-school curriculum, I must begin by confessing that I am not so well acquainted as I could wish with the working of modern sides at public schools, owing to the fact that the whole of my educational experience, both as a pupil and as a teacher, is derived from Eton, the only school, I suppose, of first-rate importance, which has not attempted to establish a modern side.

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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But though I have little or no practical acquaintance with the working of modern sides, yet I am bound to say that most of my professional friends, who are engaged in administering such modern systems as prevail at public schools, seem, if consulted, only too ready to lament or contemn the deficiencies of these systems. Moreover, in one respect, I cannot help feeling that my acquaintance with the detailed and minute results of a classical system, relentlessly and exclusively applied to the boys of a big public school, is, on the whole, an advantage to a critic of secondary education, because my experience has convinced me, absolutely and conclusively, that, for the large majority of boys, the classical system, however conscientiously administered, is, under present conditions, both with regard to its subjects and its methods, I will not say quite an educational farce, but a deliberate disregarding of most of the methods by which intellectual influences may be brought to bear on the young. "*Sunt quos curriculo Collegisse juvat pulverem!*"

The more I reflect on my educational experience, the more I am convinced that the whole system is framed far too much with a view to mental discipline of a gymnastic kind. Even the value of that discipline has been largely decreased by the ruthless multiplication of subjects, so that a method, applicable to the old limited curriculum, is no longer applicable to the swollen budget. But a worse point is that there is so little appeal to what is interesting or beautiful; so little attempt made to enlist the imagination or the emotion. And yet the basis of all humanistic education is the belief that nothing on which humanity has ever spent care and love can ever entirely lose its charm.

I daresay there are many teachers who could communicate some of this stimulus to their pupils; the lack of it, when boys leave the public schools, is very conspicuous; but here comes in another difficulty caused by the congested curriculum, that there is no time. There is only just time to get the elements firmly into the boys' heads—and on the horizon loom the thunderclouds of examination, clouds which, to use the phraseology of the old hymn, the saints certainly agree in dreading, but which are likely to break upon their heads in anything but blessings.

I do not wish my criticisms to be purely destructive, though I believe that the first function of the educational reformer will for a long time be a purely destructive one. It is not enough to point to the admitted failure of modern sides, as many reasoners do, and say, "There is the result of your desired change of subjects." Such critics forget to state that a very large majority of boys who show any intellectual promise are destined for the university, and that while the universities maintain the classical fence, a boy cannot be transferred from the classical side to the modern side, if he is destined to the university; so that modern sides, with a few exceptions, tend to consist of the unpromising material from the intellectual point of view.

Moreover, half the educational disasters produced by our secondary system arise, in my belief, from pursuing the minute, detailed, philological, professorial method in linguistic teaching. Many boys remain struggling so long in the slough of despond which is largely composed of the technicalities of grammar, they are so confused by being taught the elements of three unfamiliar languages all simultaneously, that, when they emerge, they are incapable of believing that intellectual pleasure is derivable from the further pursuit of studies the initiation into which was so wearisome. Most of them do not emerge; they scramble out on the nearest bank, and remain convinced materialists for life.

Thus, while the minute and dilatory methods applied to the teaching of classics are applied to the teaching of modern subjects as well, we are courting disaster. The principal defect of public-school education at the present day is its diffuseness, its lack of concentration, its vagueness, its desultoriness. The boys master so little, and so seldom seem to learn to use their minds; they have only learned how to set their minds to work in a mechanical way, as one might start a machine. The crying need is *simplification*. My own belief is that by taking out of the ordinary educational scheme, one by one, all the component elements which are not absolutely essential, and by keeping the balance of subjects carefully in view, it is possible to arrive at a simple core of education, which should be available for all boys, while a little should be added at one point or another, with careful reference to the individual boy's tastes and abilities, by which the emphasis might be laid on one group of subjects rather than on another. It may be objected to this that it would be impracticable; boys, it may be said, must be educated more or less in the lump, and the schoolmasters cannot afford to manipulate a boy's idiosyncrasies so delicately.

My own view is that the scheme is not in the least impracticable, because, though individual characteristics are strongly marked in boys, yet it is very easy to group boys on certain fairly broad lines; and if the experiment were tried on a large scale, the numbers in the different classes for whom it would be necessary to provide would not be found to vary very seriously.

If (1) French, (2) arithmetic, (3) modern history, English and European, (4) geography, (5) elementary science, taught by popular lectures, with demonstrations, (6) Bible teaching, and (7) English, could form the central core of education, this would be ample for the majority of average boys. The French should be taught most thoroughly, so that a boy would be able to read it with absolute ease, and write it flexibly and accurately; and the same would apply to the boy's writing of English.

One point demands a special word of explanation: the reason which induces me to omit Latin from the curriculum. I am well aware of the effectiveness of Latin as an educational instrument, and of the vital necessity that boys should

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so far learn to shift their mental point of view as to be able to conduct logical processes in an unfamiliar medium of language. But I venture to think that, for the boy whom I have mainly in view, one unfamiliar language is enough, and as I am not prepared to eliminate French from the curriculum, I think that the linguistic training should be acquired through the medium of French. But I have another reason for laying the emphasis on French, and that is that it has a utilitarian value. I think that educational theorists are apt to make a bugbear out of the word utilitarian, and, so far from thinking that it is a disadvantage to a subject to be of practical value, I think it has one immense advantage. The absence of any obvious motive for endeavour on the part of the boys is a marked characteristic of the classical system. Parents, as a rule, take the utilitarian view of education, and when boys complain at home that they do not see the use of what they are doing, there are very few parents who will encourage them to believe in the philosophical value of apparently otiose knowledge. If the schoolmasters frankly adopted French as their chief linguistic medium, neither the boys nor the parents would question the utility of what was proposed; and then it would rest with the schoolmasters to see that the training in French was literary, and not purely utilitarian.

To revert to the details of my suggested scheme, the modern history of England and Europe would give the boys an inkling of the development of modern political questions, whereas the system of doing isolated periods produces nothing but mental confusion. It is so easy to forget that boys do not possess the large, vague, floating stock of hazy general knowledge that men as a rule contrive to acquire, which gives an interest to isolated facts because a dim general plan of history, apprehended subsequently to school-days, through conversation and desultory reading, is lying about in their minds, into which the new details, however loosely, can be fitted.

To proceed with our curriculum, the science should, I believe, be elementary, and largely illustrated by experiments. Experience is against the theory, so dear to certain educationists, that boys are taught accuracy by compelling them to devote their time and energy to work that is irredeemably and essentially dull. The theory only results in contempt and dislike for intellectual processes, which is the rich grain of so much of our educational seed!

Then, according as it is discerned what the boy's special idiosyncrasies are, so should those abilities be catered for. A boy with literary and linguistic tastes should do Latin, Greek, and possibly German; a boy who is linguistic, and not literary, could do German and be spared Greek; and so on, similarly, with each subject, so that every boy would have a solid centre of necessary work, and as large a margin as possible of work that specially interested him. Of course, mistakes would sometimes be made, but they are made on a far more colossal scale now. At Eton, for instance, all the boys are practically specialists in classics. This, or some similar scheme, is the only practical solution for our present discontent, especially as the elements of discontent are so very various in character.

With regard to the question of the training of teachers. The time may be hopefully anticipated when a teachers' training department will be a normal adjunct to every public school of any importance. The essential thing is not to begin by teaching the young man fresh from the university the theory of the thing; let him make some acquaintance with the practical difficulties and personal problems first, and after a year or two of such discipline a man would be in a position to profit by a six months' course of theory, but not before. Training of teachers may be regarded as an educational factor of high importance, and I would here venture to recant a former heretical opinion on the subject; I am equally of opinion that the training should neither be too protracted nor too scientific.

What I should deprecate, and the danger which I see ahead in the formal and technical training of teachers, is that the art should be too much systematised. It seems to me of the utmost importance that teachers should be encouraged to make their own method, and to deal with teaching in an individual and characteristic way. Teaching is so delicate and psychological a business, and its success depends so largely upon the observation and perception of idiosyncrasies, that to attempt to train teachers too formally seems to me very much like training a man for the duties of paternity. We must realise that, in the complex ramification of modern life, we teachers have delegated to us what is primarily a domestic function. I have a great horror of teachers adopting a system in its entirety, however delicate and subtle a system it may be; the one thing that a teacher has to bear in mind is that a child is an individual and not a type. Of course, there are certain characteristics that are typical of childhood, and a classification of temperaments is, to a certain extent, possible. But the real teacher ought to be prepared to discard his theory at a moment's notice, and he ought never to regard his pupil as typical.

That is why I should try to insist, as far as possible, upon a teacher having some practical experience first; the instruction of a class in a training college, where the question of discipline does not come in, and where even the most individualistic teacher is likely to be affected in the direction of self-repression by the presence of critics, however benevolent, is a very different thing from the problem with which the teachers will be ultimately confronted. I am not here at all decrying the value of skilled technical training. A man may be shown how to avoid certain initial difficulties; he may be brought to realise the kind of angle at which a thought impinges upon the immature mind; but it ought to be impressed upon all those who are being trained as teachers that

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they must not be afraid of using their own methods, and that they must discover how they can handle a situation as effectively and individually as possible. The primary requisite for a good teacher is to cultivate imaginative sympathy. He must not desire that the children he teaches should perceive things in his way, but in their own way. He ought to be prepared to combat the elementary fallacies of immature minds; and thus his training should be, so to speak, pathological rather than educational. He should be enabled to make a diagnosis of the various forms of mental paralysis which are the natural concomitants of immaturity; and thus his training should be devoted rather to showing him how to deal with the negative and, so to speak, diseased elements of immature minds, while the positive side of the matter should be largely a question of the personal factors which he brings to the task.

THE BALANCE OF STUDIES IN SECONDARY SCHOOLS.[1]

By T. E. PAGE, M.A.
Charterhouse.

IN order properly to adjust the balance of studies in secondary schools, there is a pressing need, not merely for discussion, but for practical action. To that end a strong committee should be immediately formed—and the British Association is in an excellent position to take the initiative—with a view:—

1. To drawing up, at least in outline, a scheme of general study to be pursued, as a preliminary to any special training, by *all* pupils, (*a*) in schools which prepare for the universities, and where pupils stay until the age of eighteen; (*b*) in other schools which do not usually prepare for the universities, and where pupils often leave at the age of sixteen;

2. To indicating, as far as possible, what should be the method and purpose of teaching the various subjects chosen;

3. At what stage, if at any, "specialisation" should be allowed.

At the present time in the large public schools with which the writer is especially acquainted the condition of things is somewhat of this nature. Whereas forty or fifty years ago teaching in such schools was almost wholly classical, circumstances have now wholly altered; but there has been no rational and systematic attempt to deal with a new order of things such as has been created by the immense advance in scientific knowledge and the altered demands of modern life. In fact (i) either the old classical teaching has been retained, and a great variety of other subjects has been added to it in a haphazard manner, with the result that boys are wholly confused by the bewildering number of things they have to learn, so that they learn nothing well, and lose all real mental training; or (ii) classical study has been abandoned altogether by boys who join either an "Army Class" or a "Modern Side," in neither of which does any real educational purpose exist, the former aiming merely at success in examinations, which are continually altering their character according to the changing humour of military authorities; while the latter has usually no higher aims than to give boys what is called a "practical," "useful," or "commercial" education, the study of languages, for instance, being conducted chiefly with reference only to their utility, and that of mathematics and science only to their application.

As far as can be judged the tendency is at present to oust classical study completely. The pressure of competition and the obvious commercial value of scientific knowledge make it every day more difficult to maintain a study which has no apparent "wage-earning" value; and yet in the interest of science as well as literature (using those two words in a wide sense) it is vital that in education no study should be estimated too entirely by the standards of the market or the counting-house. If scientific men allow that type of culture which is represented by classical study to pass into disrepute because it does not "pay," they will find that scientific study too will soon be required to stoop to merely commercial aims. But to make such aims supreme is to ruin education, the purpose of which is not merely that a man should be able to earn his bread, but also learn to use his powers wisely and worthily, and which has for its end not only wealth but well-being. Literature and science—again using the terms with the widest meaning—are in fact the two component parts of education (putting aside for the moment such training as is manual or physical), and no form of education is other than maimed which neglects either; and the one object of all schemes of education should be (1) to see that these two studies are properly combined, and (2) that each is so taught as (*a*) to aid moral and intellectual growth, and (*b*) to be of actual service in the necessary work of gaining a livelihood.

The task is a difficult one, but the problem is in itself clear. It is roughly this:—What must we teach in the way of literature, *i.e.* of all that is meant by culture, art, the humanities, history, or the like; and what in the way of science, *i.e.* not only of science, but mathematics, geography, &c.? And, secondly, how shall we teach it? Shall we teach language, for instance, chiefly as a mental discipline, as a means of reading with appreciation, or as a convenience in practical life? And so, too, with science and mathematics. Shall mathematics aim at making boys ready-reckoners, and science at teaching them to explain a motor-car, or what? At present all is chaos, and the demand of the market seems likely to become the controlling force unless some body with nobler aims steps in. The British Association is such a body, and its Educational Section has a great opportunity of fulfilling a great duty.

[1] An abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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THE CURRICULUM OF THE PREPARATORY SCHOOL.[1]

By G. GIDLEY ROBINSON, M.A.

THE part assigned to me in this discussion is to lay before you the case of the Preparatory Schools—their present difficulties, and their wishes and proposals for a reformed curriculum; and I have undertaken it in the conviction that in this matter the interests of these private schools (for such they nearly all are) and of the public schools are identical. It would save time if I could assume that you are all familiar with the Preparatory Schools Blue-book (vol. 6 of Special Reports on Educational Subjects), which was published in December, 1900, when Prof. Sadler was at the Board of Education. But I shall be on safer ground if I briefly restate the case as therein recorded. I can do so without fear of misleading you; for, in spite of some surface changes, good as far as they go, the position is essentially what it was six years ago.

The preparatory school is responsible for the first stage in a public-school education—those precious years, from 9 to 13½ or 14, in which impressions made are deep and lasting, and when it is of the first importance that any gift or aptitude a boy possesses should be discovered and fostered. But preparatory schools are not free to choose a curriculum for themselves. That depends upon the requirements of the second stage, *i.e.* of the various public schools for which the boys are being prepared. What, then, do the public schools require? At the entrance examination held in common last month by thirty-seven of the leading public schools (including Eton, Harrow, Rugby, and Charterhouse), papers were set in the following subjects:—Latin, Greek (or as an alternative subject, German), French, English—three languages, you observe, besides the mother tongue—Scripture, English history, geography, arithmetic, algebra, geometry, and Latin verse (or, as an alternative, a paper on elementary science and observation of nature). These, then, are the main subjects of instruction. I say nothing now of the training of ear and eye and hand by singing and drawing and carpentry and so on, which many preparatory schools, quite rightly, consider essential. You cannot blame them; but they all take time, and add to the congestion of the curriculum.

This common entrance examination is the outcome of joint conferences held in 1903 between the Association of Preparatory Schools and the Headmasters' Conference. It has been supported by preparatory-school masters, because they feel that it is necessary at whatever cost to keep the curriculum for little boys as wide as possible. But the crux of the situation is that *this multiplicity of subjects is combined with a demand from the public schools for early specialisation as well.* Entrance scholarships are the root of the mischief. They are offered by the public schools—as they themselves admit—in order to attract clever boys, who will afterwards do their schools credit by winning prizes at the universities. It is the necessity of getting these scholarship candidates up to the required standard that shapes the curriculum of the preparatory school for *all* boys, dull and clever alike; so that its main purpose—as the Blue-book proves—is to teach Latin and Greek, as much time being devoted to subjects other than these as the conditions will allow.

I should have liked here to quote from an article in the same Blue-book by the present headmaster of Eton, on "Entrance Scholarships at Public Schools and their Influence on Preparatory Schools," in which he describes the effects of this competition as "very disastrous"; but I have said enough, I think, to show that the preparatory-school curriculum is vitiated by its aim, imposed upon it from above, which is to produce not the well-educated but the specialised boy. This is the condition of things against which preparatory-school masters, through their committee, have been protesting for the last fourteen years. They have urged again and again, with increasing unanimity and force, that their curriculum is overloaded, and that early specialisation is bad for all boys, whether they have linguistic ability or not; that the curriculum "should be wide rather than special, and should aim at developing the faculties in due proportion"; that it should be "arranged on principles adapted to the average and not to the exceptional boy." At their annual conference in 1902 they agreed by a majority of more than three to one, "That no settlement of the curriculum will be satisfactory to this Association which imposes on young boys the rudiments of three languages besides their own"; and on a poll of the Association this resolution was confirmed, again by a majority of more than three to one. And in February, 1903, their committee instructed delegates to a joint conference with the headmasters of public schools "to make the omission of one language an essential principle in the discussion of the curriculum."

It is difficult to see what more the preparatory schools can do at present to lighten the burden that oppresses them. They would rejoice if by conference and co-operation with the public schools they could bring about the reforms they desire. But tradition, so far, has been too strong for them. They cherish the conviction, however, that many public-school masters, and all who desire that scientific method should be applied to our secondary education, are in sympathy with their aims. Meanwhile, the closeness of their relations with the Headmasters' Conference is evidenced by the fact that a standing Joint Committee has recently been appointed (it has not yet met) to consider questions of common interest to both kinds of schools, especially the curriculum. Its functions however are, it is understood, to be advisory only. The difficulty is to arrive at any

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agreement as to the *principles* that underlie early education. Even the term "common" as applied to the entrance examination is misleading; for each public school reserves the right to choose its own subjects. Most of them, *e.g.*, make both Latin verse and nature study optional; at one ancient and distinguished school, English history, geography, French and English grammar, German, Greek composition, Latin verse, and nature study are all optional. Where then is the driving power, necessary to carry out reforms, to come from? Is it a mere dream to hope that a Commission of high authority may some day do for secondary education in England the same kind of service as the Committee of Ten rendered to the United States in 1894, by revising it on scientific principles?

Let us indulge for a few moments in the dream that such a Commission had reported, and convinced public opinion that all specialisation is a mistake until the age of sixteen or seventeen; that till then education should be of a general kind; and that an examination should be framed, to be passed at sixteen or seventeen, success in which should open the door of all the professions, including that of commerce, and also of the universities. Early specialisation would cease, and the preparatory schools would be placed in their true and natural relation to the public schools as a stage in which the requirements of young boys and the teaching best fitted to develop their activities in the right order would be alone considered. The study of the classics, as an essential part of literary training, will not suffer in the long run if we hold fast to the great law, true of educational as of all other growth, that "that which is intrinsically the best in any particular stage of development is also the best preparation for that which comes after."

What would be "intrinsically the best" in the preparatory-school stage? Religious and moral training, physical training, practical training of eye and hand—on these, I take it, we shall all be agreed. What of the literary training? I begin with languages, which rightly claim at this stage a very large share of the curriculum.

I. LANGUAGES. A. *English.*—The crying need at present is better teaching of the mother tongue. Everyone admits that the average schoolboy is strangely inarticulate, limited in his vocabulary, indifferent to good literature. The reason is that English, as an independent subject, has been almost crowded out of the curriculum. We have tried to persuade ourselves that it can be taught by the practice of Greek and Latin composition and translation. But results have thoroughly discredited this plan. What is wanted is more and better teaching of (1) English composition, both oral and on paper; (2) English literature, not as a peg to hang notes upon—the fewer of these the better—but to rouse a boy's admiration, to quicken his imagination; he should read a great deal, and read for enjoyment. We have much to learn in this matter from both France and Germany; and one of the advantages of being trained to teach is that the student is made acquainted in the process with the best that is being done elsewhere in this and other subjects of education.

B. *French.*—Side by side with English, the boy should be learning from the first a foreign language, French. Childhood is the time when languages are most easily and naturally acquired. French, on its own merits as a school of clear and precise expression, is the best complement to English; and it forms a natural introduction to Latin. What we need is a large increase in the supply of Englishmen competent to teach French as it ought to be taught—to speak it fluently themselves, and to ensure correct pronunciation from the first. But, in any case, the "intensive" method, one at a time, is essential to thoroughness and success. If (say) ten lessons a week could be allotted to the subject, it ought to be possible to begin Latin after a year and a half or two years, reducing French at the same time to the lessons necessary to maintain and improve the ground already won.

C. *Latin.*—I am a hearty believer in Latin as a mental discipline, apart from its great historical value; and the fact that generations of schoolmasters have been gradually improving it as a teaching instrument gives it an overwhelming claim to a place in the curriculum, as soon as it can be introduced without injury to scientific method. Granted that the French teaching is efficient, I do not see that Latin need be postponed (as in the Frankfurter Lehrplan) to the age of twelve. But once begun, it should take us, with French and English, to the end of the preparatory-school stage, leaving Greek and German to be taught entirely at the public school.

II. HISTORY AND GEOGRAPHY.—Everybody agrees that these should be taught in the preparatory stage; they are indispensable on their own account, and they are important aids to the teaching of English. There is no better prose reading for boys than the lives and achievements of the great men of our own and other lands. What is wanted, especially in the case of history, is a survey of the secondary field to determine what amount and kind is best in the preparatory stage as a foundation on which first the public school and afterwards the university should build. At present every preparatory school goes its own way, and the study of history suffers all along the line from want of any continuous policy in the lower stages.

III. MATHEMATICS.—I need not dwell on this most necessary element in the curriculum. The teaching of geometry has lately been reformed. Where teachers fresh from the universities generally fall short is in ability to explain simple processes in arithmetic, and this is one of the essential things that training should give them.

IV. NATURE STUDY is beginning to take its rightful place in the preparatory schools. This is

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largely due to the admirable syllabus of nature-study work which was drawn up in 1904 by a committee of the Public Schools Science Masters' Association; partly also to an address to the Preparatory Schools Conference in the same year by Mr. O. H. Latter of Charterhouse, who explained the reasonableness of the syllabus and its great practical value in training a boy to use his eyes. Mr. Latter pointed out the difference between a lesson in science, which appeals to the memory, and a scientific lesson, which is a step towards the acquirement of scientific methods and habits He showed how nature study trains a boy's ingrained curiosity, leading him on to experiment and research in all kinds of subjects on his own account; and how the use of a notebook to describe what he sees helps other subjects, such as drawing and English composition. What proportion of candidates for entrance at the public schools last month offered nature study I cannot say, for thirty out of the thirty-seven schools make it an optional subject; and as it cannot therefore affect a boy's place, we may conclude that at these schools he would not offer it, even if he had been taught it. At Charterhouse, where it is required as an alternative to Latin verse, the proportion was about 30 per cent. of the candidates; and Mr. Latter tells me that, so far as he can judge, the work is being done on the lines recommended by the syllabus already mentioned. For nature study of this description there would seem to be no special scientific training *necessary* on the part of the teacher. What is necessary is personal keenness—the enthusiasm for the subject which, being itself interested, makes boys so too.

And this leads me to one final recommendation of a more general kind on the subject of professional training. The teacher in this first stage —the preparatory stage of education—is faced by problems of the most difficult and responsible kind. Here, even more than in the second stage, he needs all the light that psychology, or educational theory, or the practical experience of others, can give him. And to have been trained in method —in the habit of so preparing his work that he knows exactly what and how he is going to teach when he enters his form-room—must be of the greatest possible service. But subjects and standards at this stage are necessarily elementary, and the teaching of them may easily become a "sad mechanic exercise." Therefore, if only for the sake of his own intellectual self-respect, I should like every master to have, besides his form-work, some special subject—a hobby, if you like—be it nature study or geography, or drawing or handicraft, which would keep his enthusiasm alive, and of which he should be a chief exponent on the school staff. No training will be complete which does not make provision for and encourage at least one such special subject. The teacher, as well as the pupil, should aim at the highest development of which he is capable.

THE CURRICULUM OF THE PRIMARY SCHOOL.[1]

By ARTHUR BURRELL, M.A.
Principal of Borough Road Training College, Isleworth.

THE balance of the curriculum in a primary school is inextricably connected with the massing of the work. Before we assign its proportion of hours to history, carpentry, or speaking, we have to consider in what mass these several subjects are treated. I am not speaking of correlation. The teacher who sets a memory map of India, and follows it up with a biography of Clive and a repetition of the Pipes at Lucknow, is correlating work, a procedure not appreciated by the class, valuable though some people think it to be. The teacher who, with a map or model before him, or using a lantern, deals in a series of lessons with climate, flora, exploration, conquest, history, biography, and present problems, is massing work, and any intelligent child can understand the teacher's logic. In the correlation the various items may fall into distinct masses. In the massed work everything is in its place.

The massed work of a primary school falls into six important groups (I am not speaking of girls' schools, in which there are seven groups), and the first, the basal, and the most important of all is the physical work.

The true physical work of a primary school means something much more than a monotonous drill, native or imported (imported for preference), carried out by steaming children in thick clothes on an asphalted or puddly yard. I suppose the day is distant when an easy, light school-dress will be in school-hours compulsory, and still further distant is the day when, along with a change of dress at 9 a.m., will come a minute's dip in a school swimming-bath. But freedom to move in one's clothes and a sense of cleanliness are the bases of true hygiene. As yet we have it not. Lessons on hygiene, talks on physiology, are good enough if there is time for them, but the lightly dressed, clean child and the well-ventilated class-rooms in which children *live, and breathe, and have their being,* are the best lessons we can give. As yet we have them not. I suppose everyone here has attended educational conferences, deputations, meetings on health, in which every principle of health was calmly disregarded. Mark Twain tells us of one church choir which behaved itself, but he had forgotten its name. In like manner I remember one conference in which the windows were open. I know the name. It was at the Home of Education, Ambleside. We openly disregard what we profess to believe in. No man of science has, I believe, yet found an easy way of telling a teacher when he is teaching in impure air. Allow an unscientific person to suggest that primary-school work would improve all over England to-day if once, at least, in every lesson a caretaker should open the class-

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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room door and, by exhibiting a ticket, report on the state of the air in the room.

But the physical work is more than this. We are now allowed to put games and swimming in our time-table. There is no mention yet of boxing, fives, gymnastics, and athletics. No provision is made, no suggestion is made, for something which is more important than the well-fitted and expensive building. I mean, of course, the playing-field centre. Until local authorities are compelled to provide a levelled grass field for all schools within a certain area, the physical chance of the primary-school boy and girl has not been thought of. The Board of Education, in words of burning common sense, written over the signature of Robert L. Morant, has pointed out what ought to be done. It has shown what such playing-centres may mean in the development of the boy and the school, physically and morally; but the way to provide these is not yet considered. What has been long regarded as a first necessity for all secondary schools has been rigidly withheld from the primary-school boy as though he belonged to a different order in creation; and no Almond of Loretto has arisen personally and practically to plead his cause.

Next to the physical work is the mass which I may call tool-work. A tool is an instrument which shortens labour and asks for skill. The use of it is fascinating; all children love it; with it they *do*. Tool-work is infinitely more than manual training; it is more than hand and eye work. It is the definite *study of the use* made by civilised man of the pencil, the pen, the compasses, the scale, the balance, the jack-plane, the spanner, the saw, the soldering-iron, the needle, the knife, and a host of other instruments. A young friend of mine arrived home from school bought from the gardener a disused bicycle, dismantled his own, which was not high enough, refitted the purchased article, tightened, scraped, painted, and rode the renovated machine the same day. He came from a school where boys are taught the use of tools as a means, and all the measuring, fitting, cutting, and decorative power in him had been brought out and increased. He could, in our language, turn his hand (the best tool in the world) to anything.

After the tool-work comes the geographical work. It is, of course, the largest mass. It involves the application of a good deal of tool-work. It demands the scientific study (elementary, of course) of climate, and the results of climate; it requires abundance of illustration (by means of the table or garden-map, the lantern, and the illustrated newspaper); it asks for reading of books of travel and books on the development of commerce, and to it are appended history, biography, and the daily or weekly newspaper. As Mr. H. B. George says: "History is not based on geography; history *is* geography." I doubt if the primary-school boy has as yet had an inkling of what geography means—this huge mass to which almost everything can be referred. I would like, here, if I had even one minute to spare, to plead for a radical change in our history teaching, and to plead for a little world history; but I cannot stay to touch on it. At the risk of being thought one more *laudator temporis acti*, I may say that I believe, from what I can hear and see, that geography and history teaching has of late years not been improving.

The mass known as English work calls here for one commentary, and it is this: that the problem of the school library has not been faced. Up till now—I speak of primary schools as a whole—the boy is not allowed to read books: he reads readers.

On mathematical work one word must be said. I suppose anyone suggesting a diminution in mathematical work will be labelled as retrograde. But vastly improved as our methods are, no one is satisfied with the result, and mental mathematics, as opposed to the laborious setting down of figures, has, even as a discipline, not received in modern days its share of attention; while I, for one, cannot see on what principle it is wise for a boy of eleven, ignorant of the outer world, unfascinated by all history and geography, and unable to do anything with any tool, should be encouraged to rattle off trigonometrical formulæ. Surely in elementary mathematics there is scope enough for the most enthusiastic mental disciplinarian.

Out of a possible thirty-two lessons, it seems to me that the geographical mass should receive eight, the physical work and tool-work six each, the English work and the mathematical work five each, and the singing and speaking two. It must be observed that throughout the work oral description, oral composition, and exact oral phrasing *on the part of the child* should be largely increased, and that while time may be saved on mathematics and grammar, more time should be given to the geographical, the tool-work, and the care of the body. No water-tight compartment need be fitted up for that moral instruction, which, beginning with the teacher's own person and own example, cannot be excluded from any lesson which is properly and faithfully given.

If I turn now for a minute or two to our training colleges, I would like first to say that no one who knows the great colleges has any doubt as to the admirable quality of the greater part of the teachers who come to them and from them. I shall not be misunderstood, I hope, when I say that we have not yet hit upon the method of excluding the unfit. Although the pupil-teacher may pass many examinations, and although he is sent to the training college with the Board of Education's imprimatur riveted firmly on to him, he is in many cases a person who is unfit, who will always be unfit, physically, intellectually, or temperamentally, to stand before any class, or to instruct or train any child. The whole history of education, from Aristotle to Arnold, tells us that a school is not made by its buildings and by its laboratories: it is made by its teachers.

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It is obvious, to begin with, that the would-be teacher should have passed some examination as to his general knowledge and fitness long before he comes to a college, and that such examination should demand positive physical qualifications from one who is setting out for an arduous life. Except in the case of the minority, who will, under any set of rules, look after themselves, I think I may say, without fear of contradiction, that among persons sent up to training colleges, practical hygiene is ignored. It is *this* which, from the age of fourteen onwards, I would like to see put in the place of a great deal of our bookwork psychology and our theories of education. It may be that compulsory medical inspection of schools is coming—I hope it is—but it is to the teacher that what I may call a medico-ethical training is of such vast importance. Your doctor drops in once a week to detect diphtheria or chicken-pox. Your teacher is standing, hour by hour and every day, before cases of weak sight, incipient deafness, malnutrition, and atrophy (moral, as well as physical and intellectual), and is faced with problems arising from the evil home. The children of the decent poor pay, in many cases, heavily for our *theoretic* bookwork, unsupported by definite knowledge of facts on which doctors and psychologists agree.

I need scarcely say that, though our material is in many cases admirable, our tool-work in the colleges is, in one respect particularly, a mockery. I allude, of course, to the subject of drawing. It is not as if we had not been warned. We know that four times as much study as we give could be given to drawing, and yet we should not have too much. The immense advantage of even moderate skill at the blackboard is acknowledged by all, and yet it is neglected in favour of the calculus or of Greek.

It is precisely the same in regard to the geographical work and all that it means. Wide reading, the study of the art of oral description, appreciation of modern problems—to all of these we give, and have to give, the go-by; while as for English literature, it seems little short of ludicrous that, having neglected it for thirty years, we should be astonished that we can find no teachers to deal with it satisfactorily.

The training college is not to blame; the teacher is not to blame. He has worked hard and continues to work hard, but, look where he will, he can find no scope for his powers, no goal for his ambition, except in a scheme of study which is manifestly unsuited for his work in a primary school. If we choose our teachers well, if we put before them something to work for and give them their reward when they have worked for it, we shall have no cause to complain. But until that is done, people will go on wondering why it is that the results of the primary schools and the training colleges seem unsatisfactory.

I am quite aware that the primary-school teacher, if he heard me, would not, perhaps, recognise my words as those of a friend; but I believe that if I had fifteen hours allotted to me instead of fifteen minutes, he would, at any rate, be ready to consider whether or no it would be well for him to get out of a groove into which he has been driven, and in which he is so laboriously spending his days.

EXAMINATION AND INSPECTION.[1]

By Prof. Henry E. Armstrong, Ph.D., LL.D., F.R.S.

"We in England have become so completely salted, soused and pickled in these examinations, that we no longer use our natural intelligence in judging of them. We take them for granted and never or rarely inquire into their effect on the human mind."—*Warde Fowler: An Oxford Correspondence of* 1903.

I ASK to be allowed to sound a note of warning with reference to the effect which examinations and inspections may have on our higher school system unless great care be taken and ideals are formulated very different from those which now prevail—if indeed any ideal can be said to prevail.

Whilst the burden of examinations has been removed from the elementary schools—unfortunately only when the system had done its fell work and degraded teaching to an almost mechanical routine—both examination and inspection seem likely to become more and more dominant factors in the life of the secondary school. All over the country, the schools are sacrificing their freedom for a money bribe, in exchange for State or County Council grants. It may easily happen that the secondary schools are affected as disastrously as the elementary have been, if forewarned we are not forearmed. The depths to which we are fallen is well shown by the fact that *English* teachers have greeted with rejoicing the suggestions for the teaching of *English* and the list of "classics" issued by the Board of Education—which, however, has not yet appreciated the paramount need there is in schools of first encouraging a love of reading and of teaching the true art of reading before studying classics of any kind. The schools are allowing the Board to dictate exactly how many hours are to be devoted to this or that subject. Syllabuses are being asked for in every subject. When the Board of Education does not legislate, publishers come in with annotated text-books. No business could be conducted under such servile conditions.

A free people should have free schools—schools which are free to develop individuality and in which teachers exercise freedom of thought. Nothing seems to me so necessary to remember as this in these days of preponderant mediocrity. It is sad that a free people should itself seek to part with freedom—but such is bound to be the effect of the spread of liberal ideas, I suppose, notwithstanding Herbert Spencer's warning.

It rests with the schools to maintain themselves free. But there is little evidence that the scholastic profession is in any way aware of the duty

[1] The substance of a contribution to a discussion in the Educational Science Section of the British Association at its meeting at York, 1906.

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which falls upon it—of the glorious opportunities before it. Consider how the chances afforded by these meetings are being wasted: how few representatives of the profession there are among us. Teachers, it may be said, are too tired to come. But that is not the explanation. If representatives of the other sciences can come together, surely those of educational science may also be expected to make the effort in a really serious way. I regard Canon Lyttelton's defection as significant: he is typical of those who do not take these matters seriously to heart; typical of ourselves, who are only beginning these past few years to discuss educational problems seriously, to understand that we must organise.

The ideal system would be for the schools to examine themselves, with the aid occasionally but by no means regularly of competent assessors—somewhat as is done in Germany: always recollecting, that, after all, you cannot examine for what is really valuable in school work—that the most valuable of its results come to the surface only gradually and in later life. We are not going to undervalue knowledge in the future—on the contrary we shall demand and secure more and more of it—but we are going to set chiefest store on discipline and character: not that character spoken of on every possible occasion by advocates of our present public-school system, which too often finds expression in a slavish regard of fashion and the supreme disregard of those who are looked upon as social inferiors to which our president alluded yesterday; something far wider, real insight, a deeper gift of sympathy, will be recognised as character when the present narrow system gives place to true views of culture.

Unfortunately the teaching profession is not yet a self-respecting profession in our country—in the sense that it does not claim recognition as the most important of all the services. Surely, if education make the man, no class of men can be of more importance to us than the teachers: that they should be the worst paid and least considered class of public servants is nothing short of proof that we have as yet no clear conception of their functions. But those who decline to accept full responsibility and behave as slaves cannot expect to be treated as patriots.

When the consultative committee of the Board of Education about three years ago produced a scheme for the examination of schools—practically a school-leaving examination—involving the participation of the teachers, the almost universal cry was: "For Heaven's sake, don't ask us to assume any responsibility. Believe us, the public don't trust us; it won't pay us to be trusted"—was the silent thought in the background. The universities with examination agencies bestowed faint praise upon the scheme—fearing that they would lose fees if it became law: one going so far as to state this openly. Receiving such scant encouragement, the Board of Education has remained spineless to the present day. A great opportunity has been sacrificed.

The question is one of deepest importance to the country at large. The public love examinations, worship them in fact—glory, the mothers especially, in the performances of their dear boys and girls and congratulate heads of schools on their successes as though they were evidence of good teaching; they little know that the goodness consists in the cleverness with which teachers spy out the nakedness of the limited area wherein the examiners dwell. Years ago the *Pall Mall Gazette* put forward examination successes not, as they really are, as the measure of its soul-destroying power but as the true test of the efficiency of a school. It is not sufficiently recognised that any system of examination may be made the means of grading ability of a certain kind and that, within limits, of course, any examination, however bad, will test the powers of a particular set of candidates. But such examinations afford no guarantee of a sound education. Nearly all our examinations do little more than grade the candidates in rough order of merit with reference to the particular test applied but give little or no proof of real merit. Except in the case of certain honours examinations, the results-coat is cut to fit the cloth: a certain proportion must be passed in order to maintain the popularity of the examination, if not to select the required number of applicants for vacancies. If examiners were honest and marked according to deserts, the slaughter would be terrible: but the commercial element comes in and good examiners are forced to pocket their consciences; fortunately, in most cases, it is only too clear to them that the teaching has been bad, and feeling that it is unfair to punish the innocent too severely on behalf of the guilty, they allow a considerable proportion of the innocent to escape: to save appearances, however, some must be sacrificed.

Most of the examining bodies are purely commercial undertakings—it is absurd to think of them as serving any altruistic purpose; examining is a remunerative business. Examinations serve the purposes of the schools as a means of advertising. If we are to continue them, they must be put into competent hands, they must be much simplified and they must be honestly conducted: honest questions must be set, marks must only be awarded to honest answers. Our present system encourages dishonesty at every turn: examination is a game between rivals, not a test of true education.

The one useful purpose outside examinations can serve is to direct and improve the teaching. Our universities are claiming more and more to hold examinations for schools and the public think that the examinations are directed by the universities: but this is not the case. The university exercises no effective control but merely deputes a certain very few persons to do the work. Dr. Gray of Bradfield threw light on the system not long ago and showed that it was pretty much a one-man system. No excuse can be found for examinations serving commercial ends, by outside bodies, of schoolboys and school-

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girls, unless they are placed in exceptionally capable hands—in the hands of people who understand boys and girls and their requirements and who are, in some measure, competent to lead the teaching. But I go so far as to say that no examinations should be held except in co-operation with the schools; otherwise, the interference is disastrous and destructive of all true teaching. Take as an example the following passages from a letter which I received a few days ago with reference to the Oxford Local Examination for Junior Candidates in Chemistry and the Oxford and Cambridge Schools Examination Board Examination in Chemistry for Higher Certificates. "Would you be kind enough to spare a few minutes in looking through the enclosed questions set to boys this week. I try to make our course thoroughly experimental but can scarcely continue in the face of papers such as these. In each paper 50 per cent. of the questions deal with matters of abstract chemical theory, which to my mind is unfitted to children, at any rate to those under sixteen. Perhaps it can be forced into them but it cannot be taught to them in a rational manner. Of course the headmaster wants *results*. They can only be produced by forsaking what one knows to be the proper methods of teaching chemistry."

My attention was directed to the unfitness of the same higher certificate paper by another correspondent a few days later. Papers such as those submitted to me are absolutely destructive of all true teaching in schools—obviously they have been set by people who have never given themselves the trouble to think what boys and girls should and might do there.

The harm that is being done by examinations is incalculable. Thus there is little doubt that examinations are selecting out for the public service a particular type of individual and that not the most valuable—persons who are more or less acquisitive rather than those gifted with critical and constructive power. It may be that an explanation is to be found in this direction of the "inexcusable carelessness and extraordinary ineptitude" and "the want of intelligence that is deplorable" among War Office officials just complained of in the report of the Royal Commission on War Stores in South Africa. That they have given us a class lacking practical aims for the service of the schools, there can be no doubt.

It has long been recognised that the scholarship examinations at the universities set an altogether false standard in the schools; the evil is becoming greater every day now that the schools are forced into competition with the colleges. The preparatory schools are thrown out of gear by the entrance examinations to the upper schools. A new terror has been introduced of late years in the form of County Council scholarship examinations. Until all these interferences are removed, it will be useless to contemplate the introduction of balanced curricula; continuity of study will be impossible.

A radical change in the system must be made, if examinations are to be continued.

However good inspection may be in principle, it is easily overdone. One bad effect it will have will be to relieve heads of schools of the sense of responsibility which should always rest upon them: if inspectors find fault, teachers will be sacrificed; if they do not, it will be thought that all is well. The time will soon come when instead of cannon, teachers will have inspectors to right of them, inspectors to left of them—and fairly incompetent ones too. Again, let me point out how little the inspectors did to rescue our elementary schools—how few among them protested in any effective way against the abuses which were rife in the schools—how reform has been forced on mainly from outside. Can we expect much more from secondary inspectors as a body? Among them there are not a few able men; but what opportunity is given to these to leaven the mass? That incompetents may do the greatest harm is clear when it is remembered that women teachers especially tend to hang on the inspector's every word.

I do not propose to discuss the matter in detail; to do so would be to raise too many questions and to encumber discussion. But I would urge broadly that something must be done to organise inspection and examination also—to force inspectors together, to force examiners together, to discuss the principles on which they should proceed; to give opportunity for free exchange of opinion and for the discussion of liberal ideas and conceptions of progress. Nothing of the kind is attempted at present. The Board of Education is nothing if not a follower of fashion—although sometimes after a very long interval: therefore, taking a leaf out of the reports written by our president, the Board has counselled the inspection of areas rather than of single schools. The change will be welcome if it have the effect of introducing the needed element of breadth into our system. But all inspection will be worthless unless it be made constructive. The only persons who are fit to be inspectors are those who can take their coats off and do the work themselves, knowing how experiments are made and having learnt to think for themselves: who know both how to initiate an experiment and how to carry it through all its stages.

To find fault is useless—we are all in fault more or less: what we want is light to lighten our darkness. I plead therefore for the abolition of the young man from the university with turned-up trousers, the sign of lack of power to think independently—I meet them repeatedly among inspectors—and the substitution of true inspector-missionaries who will carry light into the heathen paths of our schools. A few such men exist and others may be trained into being. The Recorder of our section is a brilliant example. The value of the pioneer work which he did in London elementary schools has been referred to by me before to-day: the best proof of its great

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value is the fact that it remains unappreciated even to-day. But in Ireland he has done an even greater work, particularly by showing how inspectors may be trained. He must tell the story himself and speak of the results. What I wish to point out is that the experiment has been tried on a large scale and with great success.

It will be long ere the universities are sufficiently reformed to give teaching such as is required to make men and women effective teachers. Meanwhile, we may do much, if we select the few men and women among us who are capable of acting as inspector-missionaries and send them among the teachers. I know from long experience that there are many really able teachers who merely require a few words of advice and encouragement to make them highly effective.

The improvement of education is largely a question of organisation: if we can but organise, we shall succeed; our difficulty is to believe that we are most of us quite ignorant in these matters and that we might gain much by working together under the guidance of the few experts we have. At present, we allow fads to prevail; one expert follows the other but no common purpose prevails. Just as we were beginning to establish a sound system of elementary experimental studies and method was beginning to take its place in the schools, the craze of unmethodical nature study came on the field; now, physical training is to the fore; something fresh will appear to-morrow. There is no fixity of purpose in us—because we are so unscientific.

THE TEACHING OF MECHANICS BY EXPERIMENT.[1]

By C. E. ASHFORD, M.A.
Headmaster of the Royal Naval College, Dartmouth

AMIDST all the developments in the methods of teaching the physical sciences, mechanics is only just beginning to be affected. So far as public schools are concerned, this is probably due to the fact that it was for generations in the hands of mathematical masters, who naturally treated it as a deductive, not an inductive or experimental, science. Given the principle of the parallelogram of forces and Newton's laws of motion, they trusted confidently in their own mathematical powers for developing the science on these foundations. It would have implied something like a slur on the power and accuracy of mathematics to appeal to experiment, and this feeling was so strong that no stress was formerly laid on the experimental basis even of the laws and principles on which the science was built up.

The result was an elegant and rigorous treatment of the subject, which formed an excellent training so far as it went, but which lacked interest and left unattempted what is perhaps the most important result of teaching a science properly.

When experimental science was thrust into the school curriculum through the pressure of outside opinion, the introduction of the masters who taught it did not modify this one-sided treatment, for it happened that these men were for the most part chemists. For many years science and chemistry were synonymous in schools; most of the specialists in chemistry were not unwilling to be relieved of the responsibility for teaching mechanics, and the subject remained a part of the mathematical course, usually learnt only by the better mathematicians.

With the advent of the physics master came strong pressure to develop the experimental side of mechanics; this has been done in many schools, but hitherto it has been subservient to the mathematical order of treatment, designed to illustrate and perhaps to verify the results deduced by other processes. No attempt is usually made to attack the subject inductively; the apparatus is merely the text-book diagram in three instead of two dimensions. In addition to this, the experimental treatment is practically confined to statics.

If we turn to the other group of schools which is engaged in the teaching of mechanics, the technical schools, we see exactly opposite methods. There mechanics is treated frankly as an experimental science; the pupils learn much that no public-school boy derives from his work in class-room or mechanical laboratory, but often miss the special training given by the public-school course of mechanics.

Is it a Utopian ideal that these two lines should converge, and in their junction should admit of the development of a method of teaching mechanics which will provide for the three desiderata, a knowledge of the facts and principles of the science, a strengthening of the reasoning power, and a training in the proper way to study natural phenomena in order to fathom the underlying causes? I believe that this can and will be done.

The recent reforms in geometrical teaching show that mathematicians have realised the great value of a preliminary experimental course even for the most crystallised of the deductive sciences. The same process must be adopted in the early training in mechanics; this has to some extent been done, but the difficulty here is that the methods must be different. What is needed in this early course is the influence of the engineer with his experience of actual practice, not that of the schoolmaster with his traditions of text-book toys and models. It is difficult to say how much the schoolmaster and the schoolboy owe to Prof. Perry in this matter. His insistence on the necessity of starting by an investigation of actual machines has already begun to influence school teaching, and the course he advocates is exactly what is needed to form the foundation on which the mathematical master may build, as well as to supplement the course he gives.

I should like to mention here an interesting

[1] From an address delivered at a joint meeting of the Physical, Engineering and Educational Science Sections of the British Association held at York, August, 1906.

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attempt to combine some of the features of a technical and a public school.

The Admiralty has established colleges at Osborne and Dartmouth for training naval officers. Now, the naval officer has to be a many-sided man, and not the least important side is that of an engineer. It is of vital importance that his engineering should not be merely book-learning; he is a man of action, and a large employer of skilled labour, in a ship that is "a box of engines." Hence he must receive a sound practical as well as theoretical training in science and in mechanical and electrical engineering. The problem of giving it to him is complicated by the fact that due attention must be paid to many other sides. We may neglect these for the moment, but they must not be left out of account in arranging for any one branch.

In the ordinary process of training engineers both a college course and a workshop course are essential, and much discussion has taken place as to their order of sequence. The Spartan *régime* of evening classes following laborious days at the bench is now recommended for the Admirable Crichtons, and this with important modifications is adopted for all naval officers *in statu pupillari*.

It is not the custom for great engineering firms to arrange their establishments solely with a view to the most rapid progress of their premium pupils. They own workshops, not educational establishments. In a workshop which *is* an educational establishment very many hours may be saved without detriment to the shop training. These hours may be employed in carrying on concurrently the scientific as well as the general education, thus providing that excellent recreation, a change of occupation, and making it possible to ensure that the chain of subjects taught, from the most technical to the most humane, should be a true chain, with each subject linking into and depending on the next.

During the whole of their four years at Osborne and Dartmouth the cadets spend a part of every alternate working day in workshops, in charge of trained engineers, not schoolmasters. Considering for the moment only the effect this has on the teaching of mechanics, it will be seen that for any mechanical principle which they learn from masters in the lecture-room the cadets see many practical applications the next time they go into the workshop. Again, they come to the lecture-rooms with a store of practical knowledge of machinery and materials on which the lecturer can base his teaching. There is available, too, a storehouse of knowledge on which the mathematician can draw for his examples, preferable in every way to the problems on finance, clocks, and adulteration of grocery which used to swell the text-books of arithmetic and algebra.

It is evident that these conditions are very favourable for carrying out such a plan as I have suggested, of building up a logical and mathematical superstructure of mechanical knowledge on the foundations of an acquaintance with real machines and processes. It would not be fitting for anyone connected with this building process to attempt to estimate its success, but I may draw attention to some of the points which have suggested themselves as important in the laboratory and lecture-room teaching of mechanics, as well as possible under more ordinary conditions.

I may say at once that I have no sympathy with the fashion for teaching boys kinetics as an introduction to statics. It is a highly convenient sequence in which to develop the subject for anyone who already possesses a general knowledge of the whole, and may commend itself to the metaphysician, but it does not do so to the ordinary boy. The latter finds it easier to think about and to experiment with bodies at rest or moving with a small uniform velocity. He starts with a good working idea of a force; it is a long time before he is anything but hazy about an acceleration. To his mind a force is chiefly occupied in preventing motion or in keeping up fairly uniform motion against a resistance; in his experience uniform acceleration is rare. I venture to suggest that it is comparatively rare in the experience of most of us, and that we have evidence of this in the continual harping of text-books on bodies falling freely and trains getting up speed.

I believe that most boys in their heart of hearts always believe that a body loses its weight when falling freely. How, then, does he grasp the idea of a force producing its acceleration? And if he inquires how sundry great principles really are established, he is referred to a planet or a pendulum, of which the acceleration is none too constant.

Assuming that we begin with statics, we must use the boy's own muscular sense and experience to give him the notion of force. But a spring balance must be called in to help him to make quantitative experiments. He will learn little at first from a lecturer, but will need a good deal of guidance in the interpretation of his experiments. He can easily rediscover and verify to his own satisfaction the parallelogram and triangle of forces. It appears to me to be a perfectly sound compromise to let him rest content with such a verification, warning him that it is not a proof, but that he will be able to prove it when he can apply the laws of motion; and when later on he has grasped these and perhaps understood why we trust them, we can bring him back and give him a rigorous proof. This is only a first course, intended to give the learner vivid and accurate ideas, and to give him a chance to use his drawing instruments as well as his imagination and powers of analysis. I do not suggest that, after the foundations have been well and truly laid, the superstructure should not be erected according to the traditional methods; I believe that in the modernising tendency of the technical school there lies a serious danger of forgetting this, and of making no provision for a proper study of more advanced mechanics. The same danger has been guarded against in the revolution that has taken

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place in the teaching of geometry; it is to be hoped that the influence of the public-school teacher will effect it in mechanics.

The average boy's knowledge of the mechanics of everyday life will make lectures on levers and the moment of a force easy and interesting. The extent to which he can deal with energy depends on the amount of science he knows already, but he will have no difficulty in comprehending the idea of work and its measurement, when illustrated with actual machines. He can early experiment with such machines as a screw-jack, block and tackle, differential pulley-block, or halley-jack. Working with these will make him think, and he will do it cheerfully because he is dealing with actualities, not toys and models, and because he can reduce his experiments to a form which when plotted on paper will tell him things worth knowing.

Now, the ordinary school course omits this most important and interesting part, which probably teaches a boy more real mechanics than all the rest. Unfortunately, school laboratories are stocked with elegant models of these machines. The scientific apparatus maker sends his lists to schools: the maker of tools does not: and that, I believe, is the true cause of the fanciful nature of the mechanical apparatus still to be found there. Curiously enough, the model not infrequently is more costly than the genuine article. To take an example, the list price of a wooden model screw by a scientific instrument maker is 15*s*., that of a brass working model of a screw-jack is £2, and the list price, of a maker of the commercial article, is 6*s*. for a 1½-ton jack. But I believe that many schoolmasters would think it as unreasonable to order some heavy weights and half a dozen screw-jacks as to order half a dozen locomotives for laboratory use. It is hard to break away from the glass-cased balance and the feeling that a hundredweight is out of place in a well-conducted laboratory.

But perhaps the most marked feature in the teaching of mechanics is the lack of experimental illustrations of kinetics. The whole of the earlier parts of kinematics and kinetics usually consists of appeals to a boy's imagination and mathematical reasoning powers, eked out by references to some few phenomena of daily life, with perhaps an exhibition of Atwood's machine and the pendulum.

Teachers know only too well that, from the point of view both of theory and practice, Atwood's machine is not well adapted for boys' use.

Recently Mr. W. C. Fletcher put into practical shape some experiments which any boy could perform and understand. He employed a long trolley carrying a strip of paper, which was marked in transit by an inked brush on one end of a spring rigidly clamped at the other end. This spring vibrated about eight times a second, and gave an easily measurable trace on the slowly moving trolley (Fig. 1).

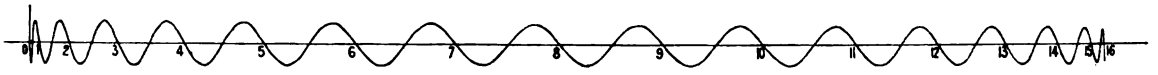

FIG. 1.

Of course, there was nothing really novel in the idea, but the novelty lay in its adaptation to the needs of a boy in a laboratory. This constitutes its great merit, and however roughly it be made (if a fairly true plane is provided for it to run on), a boy can get with it results correct to 2 per cent. or 3 per cent. after he has made the adjustments necessary to eliminate the errors which he can see and guard against. It does away almost entirely with the difficulty of timing the motion of a body. Consequently, since the same apparatus suffices for a number of experiments, and is not costly, no one should now plead poverty for leaving his boys without the means of illuminating by their own experiments a very difficult subject.

I propose to give a list of some few of the uses to which Mr. Fletcher's trolley can be put. I feel some shame in doing so, since it suggests that I am responsible for them. As a matter of fact, all that is new is entirely the work of my colleagues at Dartmouth; I have only been an interested looker-on. One remark applies to all: they are designed for use by the boys themselves, and have been extensively so used; they are not mere lecture-table instruments.

The diagram (Fig. 2) shows one of the ordinary trolleys on its plane. With this a boy can produce and measure uniform velocity and acceleration. Every experiment with a trolley provides him with a space-time diagram ready made,

FIG. 2.

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and he can plot his velocity-time and acceleration-time curves from it. He can easily discover that with a constant force the acceleration varies inversely as the mass, and that with a constant mass it varies as the force.[1] With a suitable trigger (Fig. 3), holding a pin on the trolley, and actuated by the spring in the middle of its first swing, he can get the motion from rest, thus simplifying his calculations and improving his curves. The friction of the trolley he can eliminate either by tilting the plane to the necessary angle, or by attaching a weight that will just maintain uniform motion, as shown by eye or, still better, by a preliminary tracing with the spring. The friction of the pulley over which the thread passes cannot be compensated, so that it is necessary to use a good pulley.

The objection to all such experiments on forces and accelerations still exists, that a boy may feel that the accelerating force may be lessened by the fact that the weight is falling. Of course, he adds the mass of the weight to that of the trolley,

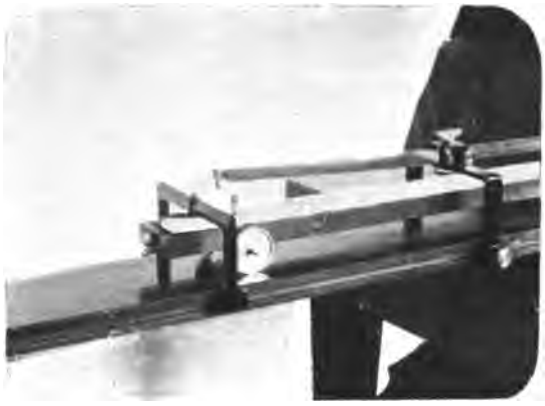

FIG. 3.

so that it is not a real error; he may be able to grasp this, and in any case the velocity acquired is so small that it is not likely to present itself as a difficulty to the ordinary boy.

If a long spiral spring be fixed to one end of the plane, and the movement of the other over a scale of inches be observed as the spring is stretched with different weights, a simple indicator diagram in the shape of a triangle is obtained, from which can be found the potential energy stored in the spring for any extension. If the free end of this spring be then attached by a thread to a loaded trolley which is pulled back, on releasing the trolley and finding its final velocity, and hence its kinetic energy, the equivalence of this to the potential energy of the system, as previously determined, may be shown.

If two trolleys are set side by side on a gently sloping table, and carry a board set at right angles to them, along which a third trolley can be dragged by a falling weight, it is easy to see and measure the composition of two accelerations. The third trolley may carry a brush which marks a straight line on the table.

With two trolleys on a long plane, each with its vibrating spring, one moving and the other initially at rest, he can verify the law of conservation of momentum, both for trolleys that stick together and for a pair that rebound. If a pistol be fitted on one and a target on the other trolley, on firing the pistol by a simple electromagnetic attachment, and measuring the momentum produced in each trolley, the same law can be shown to be true for the recoil of a gun (Fig. 4). It is not necessary to say that this is a popular experiment with boys; it is also easy to make it a safe one.

With a plank pivoted about a vertical axis and carrying a strip of paper which can be marked by a vibrating spring, and an ivory stud which can be struck by a similar stud on the end of an ordinary trolley, a boy can measure the loss of

FIG. 4.

momentum of this trolley on hitting the plank. He thus can find the moment of the blow on the plank, and can compare it with the moment of momentum acquired by the plank, thus finding the moment of inertia of the plank about its axis.

If he attaches a thread to each end of the trolley on a long plane, passing these threads over pulleys on the ends of the plane, and hanging to each thread a heavy chain the other end of which is hung from the plane so that the chain forms a U, the trolley will move with simple harmonic motion if disturbed (Fig. 5). In practice friction must be eliminated by tilting the plane to the required amount, and the motion observed while the trolley makes one excursion down the plane. In this way he can obtain a velocity-time curve (Fig. 1 and 6) remarkably near to a sine curve, or an acceleration-space curve (Fig. 7) very nearly straight.

It is usually found that boys are not sorry when the question of the rotation of bodies about

[1] See W. D. Eggar's "Mechanics" (F. Arnold)

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fixed axes is dealt with somewhat lightly. But it is not a matter that deserves such treatment, and if the parallelism of the equations for angular and linear motion is fully brought out, and if the boys make plenty of experiments with a "circular trolley" such as is shown (Fig. 8), the difficulties

FIG. 5.

seem for the most part to disappear. Experiments with this trolley have great value in clearing up a boy's notions of angular velocity, &c.; he can either take his vibration curves on tracing paper over a scale of radians and its subdivisions already marked on the trolley, or he can measure the wave-lengths in radians by taking the centre

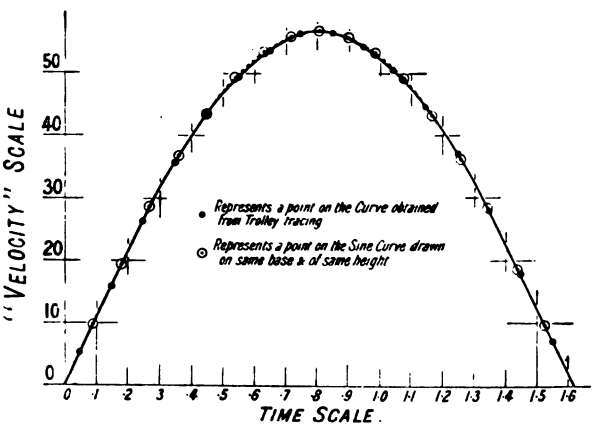
"VELOCITY" SCALE
50
40
30
20
10
0
Represents a point on the Curve obtained from Trolley tracing
Represents a point on the Sine Curve drawn on same base & of same height
0 ·1 ·2 ·3 ·4 ·5 ·6 ·7 ·8 ·9 1·0 1·1 1·2 1·3 1·4 1·5 1·6
TIME SCALE.

FIG. 6.

line of his curve at some definite distance from the axis, say six inches, and measuring the wave-lengths with a flexible inch measure. This effectually impresses on him the meaning of a radian.

There is a difficulty in this case that does not occur with a trolley used for linear motion, in that the mass of the falling weight cannot be added to that of the trolley. This can be avoided by using as constraining force the pull of a spiral spring, and using a heavy flywheel instead of a trolley. The interchange of kinetic and potential energy is observed as previously described, and gives a direct measure of the kinetic energy acquired by the wheel. Here we can eliminate the effects of friction in the bearings by attaching a

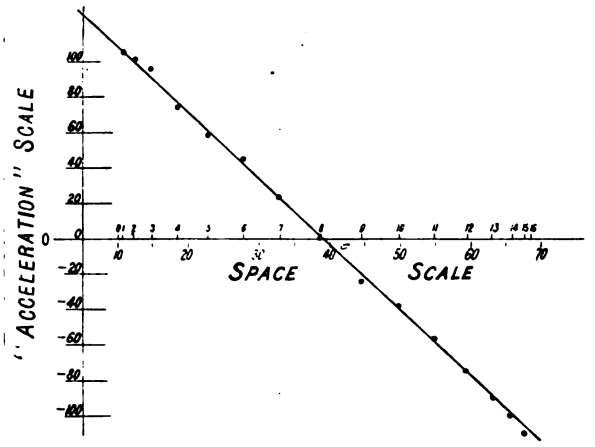

FIG. 7.

suitable weight to a thread round the axle; it is now a question of the kinetic energy of this weight, which the boy can calculate, and disregard if small enough, or add to that of the flywheel if necessary.

Exigencies of space curtail the list of experiments that have been worked out to illustrate the principles of kinetics, by the staff at Dartmouth; perhaps enough has been mentioned to show that as many are possible and simple in kinetics as in

FIG. 8.

statics. It is in the hope that this use of trolleys may receive the development which it deserves that I have brought up the question. So far as I know, the only published references to it are in Mr. W. C. Fletcher's original paper in THE SCHOOL WORLD for May, 1904, and in Mr. W. D. Eggar's "Mechanics" (E. Arnold).

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SCHOOL TRAINING FOR THE HOME DUTIES OF WOMEN.[1]

By PROF. A. SMITHELLS, F.R.S.

IT is difficult to regard any work as more important for the world's welfare than that which falls to the woman who has to manage a home. We are, I think, all agreed that it is work for which training, somewhere and at some time, is in the highest degree desirable. Traditionally this training is provided by an informal apprenticeship in the home. As a matter of fact, among the vast multitude whose daughters have to go to work it is hardly provided at all; among the rest it is often very imperfectly provided. It would be difficult to estimate the evils that result from this state of things. The only remedy is to make provision for the training outside the home, and there seems to be no reason why it should not be provided at school except this, that school time is fully occupied with other things, and the children do not stay long enough. The question, as it affects children of the poorer classes, who leave school early, is beyond the scope of this contribution, but I should like to say that in the primary school I would, with a very light heart, sacrifice a good deal of what is now learned, for some simple sane instruction in the elements of the household arts and in the inculcation of cleanly and orderly habits of living. We seem to have made a fetish of the three R's and entirely lost our sense of proportion when we take the money of the State to apply what we call education to the children of the poor.

I wish, however, to deal with a different class of the community and a different grade of school —with girls who are better off and are in secondary schools. It is commonly held that such girls should be trained entirely at home in what relates to the management of the home. From this view I dissent emphatically for two reasons. In the first place the homes in question are often very much worse managed, and the seat of much more ignorance, prejudice, and folly, than their presiding geniuses have any idea of. It is not the last word of commendation, not a guarantee of perfection, for a girl to say, "I learnt that from my mother; she learnt it from hers." Who is there that has not suffered from such revered traditions in the field of cookery, to take a single prosaic example? All practical arts were once learned in this way, and we are tenacious of the system in this country. Some of our industries are perishing for no other reason than that traditional methods of work handed down from one generation to another are being obstinately adhered to.

In the second place I dissent from the view that all which relates to the management of the home should be learned in the home, because it perpetuates a severance between the work of school and the real business of life. We are living in a period of educational revolution, and, so far as I can see, nothing is more prominent in it than the determination that school studies shall take what is called a more practical turn. This is often regarded as a Philistine movement, and the pedants are sore afraid. But the engineers determined to dethrone Euclid, and they have done it. Rule, compasses, set-square, and protractor—with these base mechanic tools does the young pupil now enter upon his study of geometry, even in the precincts of our great public schools. The power to *speak* the French and German languages, too, is now hardly less esteemed than the learned dumbness formerly induced by a surfeit of their irregular verbs.

I wish to see some like changes made in the teaching of things which are specially important to women. I would go a long way and make such changes extend right through the course of education to the end of the university career.

The management of the home and the training of children—these are briefly the topics. The subject is much too vast to discuss as a whole, and I will only take part of it; but of the whole I may say that I shall not be content until I see these matters given at least as important a position in our educational system as the training of doctors or engineers.

The part of the subject to which I have given serious attention, and on which I feel any claim to speak, relates to the teaching of science. For many years past I have endeavoured to further the teaching to girls and women of something in the nature of science which shall be of real value in relation to affairs of the household. My object is not merely utilitarian. I start with this fundamental conviction, that no man's and no woman's work is what it should be unless it engages and exercises as fully as possible his or her powers of understanding, unless it acquires an intellectual interest and gives that pleasure which is only possible to one who is working in the light of knowledge. I need hardly insist that the household is truly a realm of applied science which our educational system has allowed to remain a realm of rule-of-thumb and drudgery. I do not see the complete remedy for this in the teaching of unqualified science. One may acknowledge gratefully that excellent progress has been made in the teaching of science in girls' schools. When this is well done one great thing is achieved, which may indeed be considered the greatest thing that science can achieve—a scientific habit of mind is imparted. If this is done, if the experimental method has been faithfully taught, we have the emancipation from rule-of-thumb, the mind is set free, and all we want now is its application to a field of useful knowledge.

I know of no sphere of human activity that more abundantly illustrates the unscientific attitude of mind than the household. Think of the common phrases—"It has gone wrong; it won't work; the oven won't heat; the jelly won't set; the meat won't keep; it has gone bad; the fire won't draw." This is the language of superstri-

[1] An abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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tion, for the thoughts behind are usually those of superstition. A demon of perversity—a mere chance happening—is implied behind it all. In how many houses will you not see a poker at times laid across the fire-bars to make the fire draw! This is certainly most interesting, for it is a survival from the days when people honestly believed that the sign of the Cross made by the poker across the bars exorcised the demon in the chimney. Think of the mismanagement of gas-heating and gas-lighting appliances, of the waste of money in patent nostrums of every kind, thrust upon us by much advertising, of the suffering that arises from crass ignorance of sanitation. Surely there is room for improvement; surely it is worth considering whether we might not do more to let a little additional intellectual light into the domestic laboratory.

As I have said, I do not think unqualified science will suffice. The science that is taught in our schools still remains for the most part formal and academic in its scope, and it is surprising to find how absolutely detached this science usually is from the concerns of the household and of common life. Schoolmistresses may be found in any number who have taken high degrees in science, yet can give you no intelligible account of the hot-water system of an ordinary house, cannot tell you what it is that yeast acts upon when it is mixed with dough, and have no opinion as to whether a hand-mirror is a satisfactory test for a damp bed. They do not know why washing soda goes white or brass grows green. They think that dry cleaning is done without using liquids, and that salts of sorrel have some unique and inscrutable action upon ink-stains. They know nothing of gas meters, filters, or clinical thermometers, and are paralysed before a smoky chimney. Yet these people are learned about the oxides of nitrogen and the chlorides of phosphorus, the oxidation of secondary alcohols, and the tests for cadmium.

Whilst science of this formal kind is being dispensed in certain schools and to certain kinds of pupils, there is something of a different kind being done in other schools to other pupils. The need for knowledge of more mundane and practical matters is fully realised, and we have long had with us the teaching of this under a variety of names. Domestic economy and hygiene are the names most commonly attached. Here we have the other extreme—science, properly so called, scientific method, scientific discipline, rationally connected knowledge, are here practically excluded. The reasoning powers are in abeyance, and the pupil learns a miscellaneous assortment of facts—tags of knowledge borrowed from physics, chemistry, and physiology, and laid down by authority. "Caraway seeds are largely imported from Holland, and are much used for flavouring confectionery, cordials, &c. They are the seeds of the *Carum carui*, a plant somewhat similar to the carrot and parsnip." "There is found in tea and coffee an astringent substance which gives the well-known bitter taste to the infusions when they are allowed to 'stew.' In the case of tea it is known as *tannin*, and forms from 13 to 20 per cent. of the dried tea-leaf. In coffee it is called *caffeic* or *caffio-tannic acid*, but its amount is much less than the tannin in tea." And so on and so on. This is the sort of thing which has been offered as useful knowledge for the household. It is sorry stuff, and small wonder that it has produced nothing but nausea in the pupils and elicited nothing but ridicule from those who think that this is what we are aiming at.

I am convinced that there is a more excellent way. I am convinced that it is possible to develop a science of the household which is free from the pedantry of the formal science that has prevailed in one place, and free from the stale, flat, and unprofitable memorising of dietetic statistics that has been customary in the other. I have found it possible, as many others have done, to arrange a course of science lessons in which scientific discipline and scientific method can be inculcated by simple experimental work, based entirely on matters of the household and of daily life; where the information acquired is truly useful knowledge; and where the minds of the pupils are awakened to the fact that the household is, as I have said before, a laboratory of applied science that may constantly engage the intelligence. Syllabuses of this kind of work have been before the public for a long time, and among the earliest and best are those framed by Mr. Heller. We may call the subject domestic science. It is compounded of physics, chemistry, physiology, bacteriology; but these are hard names for simple things, and I prefer to suppress them.

Along with the teaching of domestic science in girls' schools I am anxious to see the teaching of domestic arts. I want to see a kitchen and laundry, as well as a laboratory. I want to see the teacher of domestic science well trained in the domestic arts and the teacher of domestic arts well trained in domestic science. In that case girls who have had their training in domestic science will in the later stage of their school career proceed to the practice of the domestic arts under the most favourable conditions, and their teachers will be able to play into each other's hands and give unity and continuity to the scheme of training. In this way I believe you may do something that is beyond the province of home training and is yet well worth doing. It seems to me quite as unreasonable to say that a girl will learn in the home all she needs to know about the household as to say of a boy that he will learn in the workshop all he needs to know of engineering. I submit that there is a vast undeveloped intellectual region connected with the domestic work of women. I have alluded only to a small part of it, and perhaps not to the most important, for I have said nothing of the nurture and training of children. I do not undervalue home training; I am not so inhuman as not to recognise that it must always remain the most potent element in the problem; but I see no irreverence

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in suggesting that it may be greatly and beneficially supplemented in the school. I say, again, that it is impossible to estimate the evils that accrue from mismanaged homes, and I have lived long enough to know how greatly efficiency in all practical arts may be furthered by well-directed intelligence. I feel fully justified, therefore, in entertaining high expectations of the benefits to be derived from linking the education of girls much more definitely and thoroughly to what will normally be the chief business of their lives.

EDUCATION AT THE BRITISH ASSOCIATION.

By F. E. POLLARD, M.A.
Bootham School, York.

THE meeting of the Educational Science section at York has been notable for the practical and pressing matters taken in hand, for the varied positions and points of view of the sharers in its discussions, above all, perhaps, for the illuminating and kindling presidency of Prof. Sadler.

Its success makes it possible to say that such discussions must always suffer from two facts—(1) that educational progress will seldom, if ever, come in distinct steps following upon precise and conclusive experiments, but will be a gradual movement governed by the clash of opinion and experience; (2) that no educational problem can be isolated, but each seems to involve all the rest; curriculum, examinations, training—how can these be abstracted from the one living problem of the boy's progress?

The president has been a steadfast optimist; he has not failed to recognise the fog in which we seem to move, but has found it to be rather a "simmering discontent," a hopeful puzzledness, a "sense of shortcoming" coupled with a "spirit of search." The problem of the right adjustment of central and local powers, the pressing need of a constant cross-fertilisation of ideas and of carefully watched experiments, the consequent urgency of smaller classes in the elementary schools, the desire for unity of organisation and purpose, have all been urged upon us from the chair; but especially perhaps we have been pointed to education as the servant of a great social purpose—branching out into the realms of physique, intelligence, and character alike—in the consciousness of which more and more may come to feel the schoolroom the post of duty.

It is impossible to speak here of the long and revolutionary report on practical studies in elementary schools, spoken to by Sir Philip Magnus and others, nor of the significant allotment of the section's time to Sir Lauder Brunton and Dr. Ethel Williams, nor of Prof. Smithells's demand for scientific thought in domestic economy.

For secondary-school teachers, the interest centred in four points:—(1) curriculum, (2) training, (3) inspection and examination, (4) modern languages.

Let us take the discussion on the curriculum. It was the public schools which were the storm-centre of much of the debate. Mr. Page laid before us a picture of haphazard changes and growing confusion, and invited the section to appoint a strong committee so that some nobler aim than the demand of the market might bring order into chaos. Papers by the headmaster of Eton and Mr. A. C. Benson were also read, and on the question of the classics Prof. Armstrong assured us that he did not wish teachers to abandon steak entirely, but only that it should be properly cooked, and should not form the sole article of diet. But the most practical hope of reform was found at the point where the preparatory and the public schools impinge upon one another. Mr. Gidley Robinson protested against the tyranny of scholarships, and demanded that Greek and German should be postponed till the public-school stage, and that there should be no early specialisation; and this general point was emphasised more than once during the debate.

The plea for lightening the curriculum met with wonderful acceptance—wonderful, *i.e.*, till one realised its vagueness: perhaps "simplifying" or "organising" presented more hopeful prospects. It is not easy to disentangle either clear principles or definite suggestions from the discussion which took place. Here are a few, of varying merit:—

(1) A confidence in the ideal of *awakening the desire to learn* rather than *equipping with a minimum of knowledge;* then subjects can be discarded in the faith that they will be attacked by the boys themselves in later years.

(2) It is not so much a question of the right variety of subjects as of methods and aims; you cannot condemn the language time as excessive till you know how they are respectively taught. You need a scheme of objects, not of subjects. French and Latin cannot both be justified if taught on the same disciplinary lines.

(3) The intensive method will at once simplify and bring increased efficiency.

(4) History might become largely a matter of encouraged reading (Prof. Armstrong had especial faith in the horizontal position).

(5) Don't waste time by the overlapping of subjects, *e.g.*, history and geography, composition and grammar; nor by uselessly elaborate map-work and the like.

One cannot pass from Monday morning's sitting without referring to Mr. Arthur Rowntree's address on leisure-hour pursuits, with his insistence that only by their vigorous development can the balance of the curriculum be true, that they give scope for the boy's initiative, that they bring intelligent thought and variety into the mechanical round of school life, and that these hobbies may often reclaim the mental and moral duffers whom nothing else can awaken: would that college-entrance scholarships could be changed

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into school-leaving ones, so that all-round efficiency could have its due weight!

It may be mentioned here how one and another speaking on the most diverse topics came round to the need that children should be taught to read—to read *books*, that is, not *readers*, as Mr. Burrell said; and that in later stages they should learn how to track a subject from book to book, and come to value a library.

The discussion on the training of teachers was opened by Prof. Findlay (who told of the Demonstration School in Manchester) and Miss E. Constance Jones, and some conflict ensued around the claims of psychology. Prof. Findlay put forward its value when taken in the modern sense of experimental and genetic psychology. "Results," he said, "can only be secured from the observation of children while actually acquiring school experience"; you want "the habit of treating the problems of teaching in a scientific spirit" instead of relegating them to prejudice and tradition. Prof. Gregory maintained, however, that psychology often expressed what everybody knew in terms that no one understood. The reply to this consisted in reference to the morning's discussion, in which every point in dispute and every reform proposed rested on some psychological basis, one speaker going so far as to say that what everyone was supposed to know were just those popular errors which hindered the progress of education more than anything else. The point was also made that theoretic training will be best appreciated after or during experience: let the teacher have a term off after five years' work, two terms after ten years, and a year after fifteen.

The Rev. E. C. Owen dealt with the important economic problems involved, and urged that in order to assist the prospect of a career, a *sine-qua-non* for administrative posts should be a ten or twelve years' experience in a secondary school.

From the morning devoted to inspection and examination, one may cull a few opinions. There was some serious concern that the individuality and freedom of schools should be jealously guarded, in these days of what Prof. Armstrong called "preponderant mediocrity." The same speaker holds, too, that examinations only test the skill with which teachers have learned to spy out the nakedness of the limited land in which examiners dwell! A most important paper by Mr. Heller contained too much to be epitomised here.[1] The suggestion to substitute the term "school advisers" for "inspectors" seemed on right lines; the want of uniformity in inspection standards was commented on; and from more than one quarter it was urged that the technical part of an inspector's report should be laid before the teaching staff only—governing bodies and parents will only misinterpret it. What will inspectors think of the proposal that they should go back periodically and take a term or so in the class-room?

The last afternoon travelled over modern language method, the cultivation of literary taste, and the alleged decline of German in our schools. One noted especially Prof. Findlay's view that the use of language is a synthetic, not an analytic process, and his deductions therefrom; that a new speech-centre has to be established with its accompanying set of experiences (don't attempt, therefore, to "establish" two foreign languages at once); that progress will depend upon intense absorption in the new art in an early stage, and upon suitable environment; and, as to details, that the phonetic script is of doubtful value to learners on the direct method.

It was refreshing, after our diligent attention to method, to be brought back by Miss L. Harrison to the great ends of imaginative culture and the spiritual value of poetry, and to our president's final words of counsel and confidence.

[1] See page 353 of this number.

ON PHYSICAL EDUCATION.[1]

By SIR LAUDER BRUNTON, M.D., D.Sc., LL.D., V.-P.R.S.

THE name Physical Education is sufficient to show that it is only one branch of education, and before proceeding to study physical education in particular it may be well to say a few words about education in general. The word education is so commonly on our lips, that although we may all know, yet many of us forget, that it is derived from the Latin words "e," out of, and "duco," I lead. It ought therefore to be a process of drawing out, of evolving, of developing the latent powers of the organism. It may be illustrated by what occurs in plants. An orchid grower told me that he frequently bought large quantities of dry orchid bulbs, looking like scaly, withered and dried-up onions, fit only to be thrown away, but neither the buyer nor the seller knew what possibilities were contained in these bulbs. By careful attention to them, by supplying them with the proper amount of moisture and of warmth, these bulbs grew and developed. Many of them turned out to be very ordinary plants, but sometimes one would produce a flower so rare and so beautiful that it would be worth hundreds of pounds. How much this country and the world in general loses by the non-development of latent faculties in men can never be estimated, but Gray, in his Elegy, has indicated the greatness of the loss, when he says of those buried in a country churchyard:

"Some village Hampden who, with dauntless breast,
The little tyrant of his fields withstood;
Some mute inglorious Milton here may rest,
Some Cromwell, guiltless of his country's blood."

No doubt many explorers, inventors, orators, patriots, poets, and statesmen have died without their latent faculties being developed, and the world is the poorer for it. But in order that education shall fulfil its proper function, it must be a process of development of the mental faculties and not a mere process of cramming.

This is universally acknowledged in regard to classics, which are contained in the educational curriculum, not so much because they are to be of any practical advantage in after life, as that they afford a good means of training the mind. Yet the proper use of education is often forgotten, and it degenerates into a system of cramming the memory with facts and rules which interfere with, instead of aiding, the development of the higher mental

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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faculties. Education ought to be an all-round process, not limited to one faculty, whether that be of memory alone, or any other single faculty, whether it be of body or mind. The threefold nature of man has long been acknowledged in the expression body, soul and spirit, and in correspondence with this education should also be threefold, physical, moral and mental. The tendency of education to occupy itself with attention to detail to the exclusion of general principles occurs in all three divisions. Eighteen hundred years ago this tendency in moral education was rebuked by the greatest of all Teachers, who said, "For ye pay tithe of mint and anise and commin and have omitted the weightier matters of the Law, judgment, mercy and faith," and at the present moment it seems strange that Christians cannot agree that Christianity should be taught in schools without admixture of dogma. The same tendency which occurs in mental and moral education will be sure to occur in physical education unless means be taken to prevent it, and in order to do this we must clearly understand what the object of physical education is and what it is not. It is not to train up our youths with enormous muscles which would be most useful to a coal heaver, or even with that union of strength and agility which we see in a circus clown or professional athlete.

FIG. 1.—Body development only.

What we want is to train the body so that it shall be a ready and able servant of the mind, and, by its complete and symmetrical development, aid in producing a symmetrical development of the brain and of the mental faculties which are dependent upon it. For a long time the body was not regarded in its proper light, as a servant of the mind and soul, but rather as a clog and hindrance to mental and moral development, and to starve and afflict the body was looked upon as one of the best means of attaining sanctity, and disregard of the laws of bodily health has too frequently been looked upon also as an aid to mental development. All errors, however, contain a germ of truth, and those I have mentioned are no exception to the rule. For if a one-sided conception be taken either of morality or intellectuality, a one-sided development of the organism may assist its attainment. When celibacy and sanctity were looked upon as to a certain extent synonymous, starvation and maltreatment of the body no doubt helped the monastic orders to attain their ideal. If the highest intellectual ideal be to have a complete knowledge of the Greek authors, or of mediæval history, combined with a childlike ignorance of the ways of the world and matters of everyday life, then a sedentary life in the study is probably best adapted to attain the object. But if we wish to have a man capable of playing a worthy part in his family, in his business, in his country or in the world, he ought to be symmetrically developed in all directions, and his training should be adapted to this end.

The connection between mind and brain, like many other things, is indicated by Shakespeare, who says, in

FIG. 2.—Symmetrical development of mind and body.

Othello, "O that men should put an enemy into their mouths to steal away their brains." The connection between a limited portion of the brain and a definite faculty was indicated by Broca, who showed that a lesion of the third left frontal convolution was accompanied by loss of the power of speech; but one may, I think, very fairly regard the experiments of Dr. Ferrier on the localisation of the faculties of the brain, which he described at the meeting of the British Association in 1874, at Bradford, as the commencement of a complete knowledge of the relationship between the mind and that part of the body which we know as the brain. The mind and brain can only manifest their action through movements of parts of the body, such as the lips and tongue, eyes and limbs. Some movements are independent of the brain, and are due to the spinal cord. Such movements are termed reflex, where the stimulus being applied to the periphery is conveyed to a nerve centre and back again through a motor nerve, in somewhat the same way as pulling a string which passes over a pulley may lift a latch and open a door.

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Boys at school sometimes test reflex action. Let us say A has his hand upon the desk. This seems a tempting object to B, and he accordingly prods it with a pin. Almost before he feels the pin, and before he fully knows what has been done, A draws his hand away. This action is reflex without A being really conscious of it. We know this because in certain cases where a man has had an accident and broken his spine, the feet, on being tickled, jump as they would in an ordinary person, but the patient is quite unconscious that anything is being done to them, and he does not know they move unless he sees them do so. But a stimulus applied to the surface does not reach the spinal cord only in a healthy person, but passes on to the higher and more complicated parts of the nervous system, that is, to the basal ganglia of the brain and to the brain itself. For example, A has had time to think, he resents B's prod, and if he happens to have a pin about him he will very likely press it into B, carefully choosing the place and time where the action can best escape the schoolmaster's attention. The first withdrawal of the hand was simply reflex, but the employment of the pin demanded complete co-ordination of many muscles, thought, foresight, and deliberation. The movements are carried on by the muscles, but they are set in action by the nerves, which convey stimuli to them from the spinal cord, the ganglia, and the brain itself.

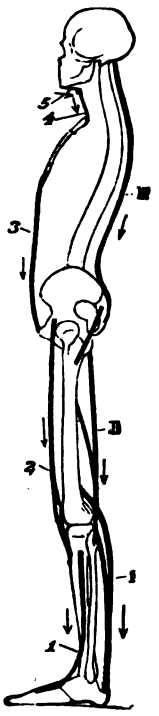

FIG. 3.—Diagram of muscles which maintain the erect posture. After Huxley. The muscles are:—I, of the calf; II, of the back of the thigh; III, of the spine (these tend to keep the body from falling forward); 1, of the front of the leg; 2, of the front of the thigh; 3, of the front of the abdomen; 4 and 5, of the neck (these tend to keep the body from falling backward); the arrows indicate the direction of action of the muscles, the foot being fixed.

The object of physical education is to develop each one of these organs so that it shall become most thoroughly efficient. Muscles are best developed by exercise, which, however, must not be carried to too great an extent. Exercise causes the muscles to become larger and stronger, over exercise causes them to become smaller and weaker. Even the most simple actions, such as those of standing and walking, demand the combined action of many muscles to oppose and balance one another. This has been shown by Huxley, whose diagram (Fig. 3) I reproduce. The body is supported upon the foot, but unless the muscles in front of the leg (1) contracted, the legs and body would fall back, and unless the muscles of the calf contracted they would fall forward. But this action of the calf muscle tends to bend the knee, and in order to keep the leg straight the muscles in front of the thigh must contract. But in their turn they tend to bend the body forward on the legs, and in order to keep it straight the muscles of the buttocks and back must come into action. At first sight it would seem as if these muscles were set in action directly by the brain, because if a man receives a violent blow on the head, he at once falls senseless and limp. Yet, on the other hand, we all know that we stand and walk without being conscious of the effort, and while our thoughts are occupied with other subjects. The reason of this is that the brain and the mind bear the same relationship to the muscles and lower nerve centres that the head of a large business does to those in his employ. Instead of himself directing the action of every workman, clerk, and message-boy, he simply says to his foreman or manager, "See that this is done." The general manager in his turn directs the managers in the different departments, and they issue orders to the workmen or clerks.

In the body the muscles may be compared to the workmen, the nerve cells of the spinal cord to the managers of small departments, and the so-called basal ganglia and cerebellum to the chief managers. The voluntary centres of the brain issue their mandate to the basal ganglia and

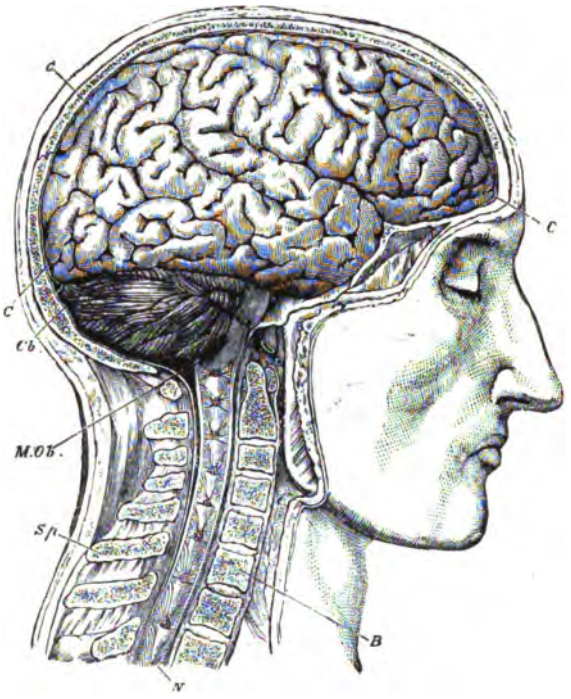

FIG. 4.—A side view of the brain and upper part of the spinal cord in place, the parts which cover the cerebro-spinal centres being removed. *CC*, the convoluted surface of the right cerebral hemisphere; *Cb*, the cerebellum; *M. Ob*, the medulla oblongata; *B*, the bodies of the cervical vertebræ; *Sp*, their spines; *N*, the spinal cord with the spinal nerves. After Huxley (by kind permission of Messrs. Macmillan and Co.).

cerebellum, and these in their turn regulate the action of the spinal cord and muscles. So long as the master is active, every member, from the highest to the lowest, is kept at work; but when the master is away they cease work, with few exceptions, and when the brain is rendered inert by a severe blow, by sleep, or by the action of drugs, co-ordinated actions such as we have spoken of all cease. But in large factories, even when all the machinery is stopped, it is usual to have a few men to look after the furnaces and prevent the fires dying out, as this would prevent resumption of work. In the body, even when the muscles become limp and the man is unconscious, the heart still goes on beating steadily, and the chest rises and falls in rhythmical respiration. But, just as in the factory, neither the master nor the subordinates learn the business in a day, so it is in the organism, and the time required

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to educate it becomes greater as the possibilities increase to which it may afterwards attain.

Thus a chicken when it is hatched will at once look round and pick up food, but the newly born babe is absolutely helpless, and remains so for many months. It is those centres which ultimately attain the highest development which make the slowest progress. This is well put by Tennyson, in *The Princess*, where he describes the joyful movements of a baby on recognising its mother. "It began to dance its body and to stretch its fatling innocent arms and lazy lingering fingers." The first movements to be perfected are those of the body, which even in after life remain of a comparatively simple kind. The last are those of the fingers, which by and by may become most complicated, and are most under the direction of the will. In this particular they resemble the movements of speech, which are of all movements best calculated to express mental states, and which are acquired at a late period, although the respiratory movements of which they are composed are of the simplest order, and are perfectly performed even at birth. All voluntary movements are not only slow of acquirement, but they are very imperfectly performed at first. It would appear as if the will had a difficulty in selecting the proper muscles to put in action,

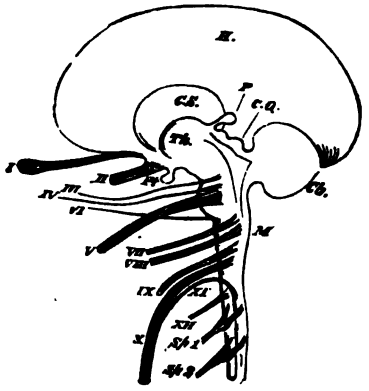

FIG. 5.—Diagram of brain, basal ganglia, medulla oblongata, and nerves. *H*, the brain; *C.S.* and *Th.*, basal ganglia (corpus striatum and optic thalamus); *Cb*, cerebellum; *M*, medulla oblongata.

and while trying to do this made the mistake of making several contract at the same time and interfere with one another's action. This is well seen in children learning to write, and when the movements of writing have been acquired the pen is held lightly between the fingers and moves softly and rapidly. But when the child begins, it holds the pen very stiffly, and the fingers may be seen to be convulsively grasping the pen, which are often seen bent at the joints, and the wrist may be flexed with the effort.

The cause of this has been beautifully demonstrated by Dr. Ferrier, who has shown that when a stimulus to the part of the brain which would govern the movements of the fingers in the hand is very great, it will extend, not only to the arm, but also to the centre for the mouth which is adjoining. In consequence of this we see children who are learning to write stick their tongues out of the corners of their mouths quite unconsciously, and as though the action would help the movements of their pen. In acquiring the power of co-ordinated action, the brain has not only to learn how to set the proper muscles into action, but to limit the stimulation to these muscles and to prevent the stimulus from spreading to others which would interfere with their action. This power of keeping muscles quiet, or inhibition, as it is termed, is one of the highest faculties of the voluntary centres. It has been investigated by Prof. Sherrington, and its necessity as a factor in physical training has been insisted upon by Mr. Eustace Miles. It is also one of the great points in the Japanese system of ju-jitsu.

Learning new movements entails constant and violent action of the cells of the brain proper, and therefore requires severe mental as well as bodily effort; but after it

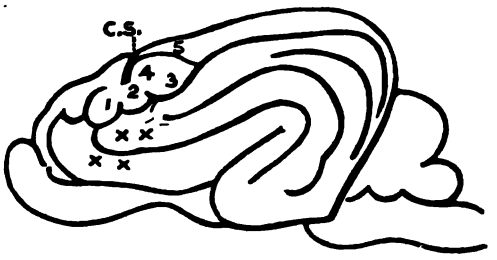

FIG. 6.—Diagram of brain of dog, modified from Ferrier. C.S., crucia sulcus; 1, movements of eyes, as if to see freely; 2 and 3, movements of fore-leg, and 4, of hind-leg, as in running; 5, movements of tail. requisite in turning quickly, as when a greyhound is following a hare when it doubles; × × ×, movements of mouth and jaws.

has been done many times the basal ganglia become so accustomed to the regulation of the muscles that they do it unconsciously, and therefore most people stand or walk while thinking of other subjects, and with trained musicians even difficult pieces may be played with accuracy while the musician is engaged with other things and quite unconscious of the movements of his fingers. Indeed, when movements have thus become, as it is termed, auto-

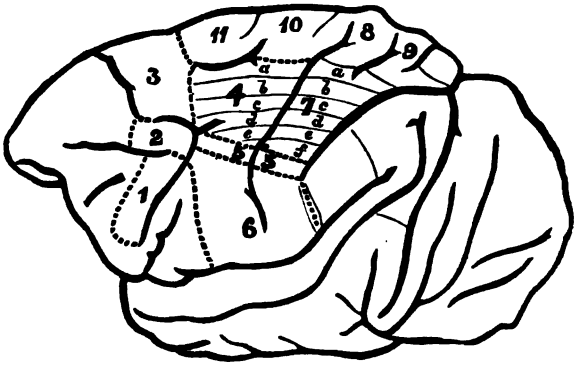

FIG. 7.—Diagram of the motor centres in the brain, modified from those of Ferrier and Horsley. The motor centres have been numbered so as to represent the successive actions in seeing, taking, and eating the apple, &c. 1, Eve sees the fruit (eyes turn to opposite side); 2, looks more eagerly at it (head and eyes turn); 3, turns towards it (head to opposite side); 4, puts forth her hand to take it (*a*, movements of shoulder; *b*, of elbow; *c*, of wrist; *d*, of fingers); 5, luxuriously shuts her eyes, so as to enjoy the sweet morsel more thoroughly; 6, eats the apple; 7, picks out and throws away the refuse (*d*, movements of fingers; *e*, of index; *f*, of thumb; *a*, *b*, *c*, as in 5); 8, 9, 10, 11, goes and gets another for Adam (8, movements of hallux; 9, of small toes; 10, of knee and ankle; 11, of hip).

matic, the interference of the basal ganglia with the cerebrum or cerebellum may disturb their action, and in the case of a musician may lead to mistakes which would not occur if he played on without thinking.

The relation of the various parts of the brain to muscular actions and sensation have been well shown by my friend, Dr. Ferrier, and by others who have followed him. I acted as his assistant in many of his first experiments, observing the results while he stimulated the brain. Often

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as I had watched them, however, I could not remember them until I considered that they were probably arranged in a definite order for the purpose of getting food, and then it was easy to recollect them. Around a fissure in the brain, called the crucial sulcus in the dog, the centres are thus arranged: paw, fore-leg, hind-leg, and tail, *i.e.* the movements of the legs which would be required for chasing its prey, and of the tail for turning, as a greyhound does when a hare doubles. The movements of the jaw are at some distance, as the jaws would usually come into action after the pursuit had gone on for some time. In the monkey, however, the case is different, as the movements of the hands, legs, and jaw would all follow one another in regular order. The motor centres in man are arranged very much as they are in the monkey, and are adapted for taking and eating fruit. One of the easiest ways of recollecting them is to take the story of Adam and Eve, and follow the different actions upon a diagram of the brain, each action corresponding to a definite centre.

Hearing, sight, and sensation are located in the various tracts of the posterior part of the brain shown in the figure, while the higher mental faculties are probably more closely connected with the anterior lobes. Injury to various parts of the brain, such as may be caused by a severe blow or by the bursting of a blood vessel, or by stoppage of the circulation through a clot, may destroy one or two faculties while leaving others intact. Thus the power of writing may be destroyed by injury to the second frontal and the power of speech by injury to the third frontal convolution on the left side in a right-handed man, while the power of the arm and leg may be destroyed, or hearing or vision may be lost, by destruction of the corresponding portions of the brain. Nor is it only the physical or mental powers that may be injured by the lesion of a brain.

The same may occur in the moral character. This is well shown by the famous crowbar case. A man named Gage, living near Boston, in America, was engaged in blasting a rock. While ramming a charge of powder a spark accidentally ignited the powder, and the crowbar, which was 3½ ft. long, went straight through his head, entering below his jaw, and coming out at the top of his skull. Wonderful to say, he recovered from the injury, but from that time onwards his character was changed. He had previously been a foreman, steady and trustworthy, but afterwards he became exceedingly idle, flighty, and eccentric, so as to be quite incapable of doing his former work, and as his acquaintances expressed it, he was no longer Gage. I have already mentioned that while the brain acts on the body, the body reacts on the brain. In cases of amputation of a limb, especially at an early age, the corresponding centres in the brain have been found to become more or less atrophied. Even in such a simple thing as memory we can see the co-ordination of the body with the mind. Many people are apt to forget a name when they simply hear it, but if at the same time they can see it in writing they remember it more easily, and they do this still better if they write it themselves and speak it to themselves, even if they do not say it aloud, because they then obtain the co-operation of the centres for hearing, sight, and memory, the memory of the fingers in writing, and the muscular memory of the larynx and tongue in speaking.

In order to obtain symmetrical development of body and brain by physical exercise, it must be remembered that a child creeps before it walks, that the simplest movements must be learned first, and that unless these movements are done automatically they involve a certain amount of mental strain. They cannot, therefore, be regarded as a relaxation from mental work, and, on the other hand, mental strain will induce bodily fatigue. This has been well shown by Mosso, by means of an instrument called the ergograph, where a weight is raised at intervals by the contraction of one finger. To the string bearing the weight a lever is attached, which works on a revolving cylinder, so that each contraction makes a straight stroke of a greater or less height which indicates a more or less perfect contraction of the finger. The mental fatigue produced by giving a lecture has been thus shown to cause more rapid exhaustion of the muscles of the arm and lessen power to raise a weight. While mental fatigue thus lessens bodily power, we must be careful to remember also that unaccustomed bodily exercises produce mental fatigue. This has been well recognised by the Departmental Committee on a model course of physical exercise, where they say, at p. 12, "the learning of bodily exercises by repeated efforts demands a concentration of attention and a mental exertion in all respects comparable to what is required in other school lessons." This report gives an

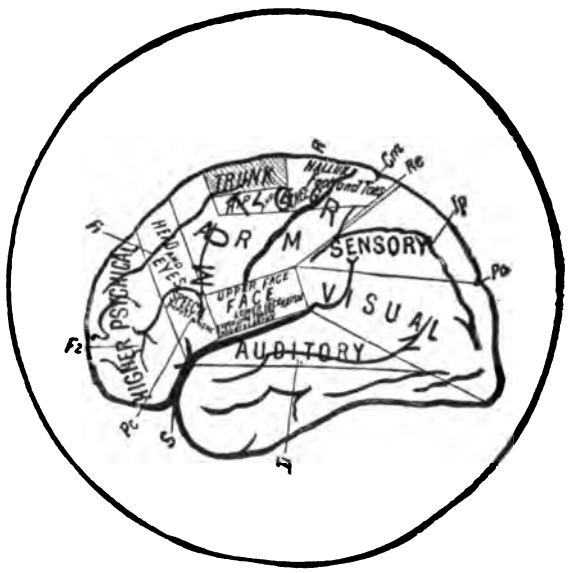

FIG. 8.—Cerebral cortex, showing the distribution of function. After Osler.

exceedingly good account both of the physical and educational effect of exercise, as well as a long list of examples by which the muscles of the lower nerve centres may become well developed. In reference to ordinary movements, and especially to balanced movements, the authors say that "at first each of these exercises requires for its performance in varying degree a certain concentration of mind and a certain effort of will, and it is only by repeated, and at first laborious, efforts that perfection of execution is arrived at. A certain degree of fatigue accompanies the earlier performances, and the more immature the structures put into action the more sensitive they are, and the earlier do they show fatigue. At the same time the effect of each performance is stored up as a permanent memory, the repetition becomes less fatiguing, and the result of lessons repeated week by week is that eventually the exercise becomes practically automatic. At this stage its value as an educational exercise virtually ceases, but its value as a nutritive exercise remains and is even enhanced."

It follows that in a school course one and the same

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exercise may be used for two quite different purposes: (1) during the process of learning for its educational effect; (2) when it has been mastered for its nutritive effect; and this distinction is of cardinal importance for determining the times at which, and the manner in which, the exercise should be taken. The value of deep respiration in order to ensure complete aeration of the blood is well recognised by the committee, and the free use of respiratory movements is recommended. These movements not only aerate the blood, but they assist the action of the heart so that the circulation also becomes freer. It is to be remembered, however, that the heart is an organ so profoundly sensible to the effects of emotion that in common language we translate many emotions in terms of the heart. Thus we say "his heart sank within him," that is, the beats became feeble and possibly slow, and we may even omit any mention of the fear and apprehension which produced this effect. Or we may say "his heart beat high," that is, its beats were strong and powerful, and we may not even name the emotions of hope, joy, or pleasure which produced this action.

I have already mentioned that muscles during exercise require an extra supply of blood, and if they do not receive this, increased action causes them to become smaller and weaker instead of being larger and stronger. But increased supply of blood to the muscles requires more powerful action of the heart to maintain the circulation, and thus increased muscular exercise while the heart is stimulated by pleasurable emotions tends to strengthen the body, but exercise with a heart depressed by apprehension or even by simple distaste for the movements will weaken instead of strengthen them. The same thing holds good for the nerve centres. It is, therefore, most important that physical exercise should be rendered pleasant and attractive to children, and that they should not be wearied by monotony. We see the necessity for change more especially in small children. Their movements are almost incessant, so that they weary out grown-up persons who may try to imitate them. But these movements, both in children and in young animals, are not continued. They give a little jump here, a little run there, a little climb, a little rest, and so on. Everything is done for a very short time, and its movements are constantly changing. As the child or animal grows older the power of steady movement and continuous attention increases, and it is necessary to adjust the kind and amount of exercise to the age and strength of the child. Even in adult life continuous action is, as a rule, disagreeable, and the most favourite games are those in which periods of brisk movements alternate with times of comparative rest.

Amongst the best exercises for developing both the body and the higher nerve centres are games of ball. Such games have been favourites throughout the whole history of the world. We find them pictured in the tombs of ancient Egypt, we find them described in the Odyssey, and we see them to-day in every playground. They train the mind as well as the body, for they require observation in regard to the ball, judgment in regard to its speed, and rapid decision in regard to the movements necessary to reach it, and rapidity and precision of action in these movements themselves. Their chief disadvantage is the space required for such games, but we hope that this difficulty will be met by the new legislation in regard to playgrounds. Another exercise, at present but little known in this country, but which is likely ere long to be widely practised, is the Japanese system of wrestling, ju-jitsu. Very little room is requisite for this, and it is not only very interesting, but in it the same power of observation, judgment and prompt action is required as in games of ball, in order to employ the proper attack or defence as required by the rapidly changing movements of the adversary. Another excellent exercise is that of swimming. It seems strange that in an insular nation whose proud boast it is that it rules the seas, the art of swimming should be unknown to all except a very small minority.

Efforts are being made in some towns to encourage the practice of swimming, and large baths have been erected which are used for swimming in summer, and being covered over in winter are converted into gymnasia. It is to be wished that what is being done in some towns may be done in all. The power of floating of any individual depends greatly upon the chest capacity as compared with the development of the limbs, for the limbs are heavier than water, and the chest, with the air which it contains in the lungs, is the float. Even with a narrow contracted chest a man may swim by vigorous action, but much more exertion will be required to keep him afloat than if he had a large chest. Breathing exercises which develop the chest may, therefore, be looked upon as a useful adjunct to swimming and these exercises if practised by children will form a good preparation, not only for swimming, but for all games and efforts afterwards. By graduated exercise only can the chest be developed. The heart can also be strengthened and it is the gradual strengthening of the heart in course of training that makes it so easy for a man when thoroughly trained to do feats which would be impossible for him in his ordinary condition. But if a person attempts to do any feats either of strength or endurance which are too much for his heart, instead of strengthening it, he will strain and weaken it. Even a short but severe exertion will cause the heart to dilate. In the young and healthy this dilatation soon passes off, but if the exercises be frequently repeated, or if it be so severe as to pass the bounds of recovery, the heart becomes permanently dilated and the person's power of work and strength is permanently diminished. But the amount of exertion which in one person would only cause pleasurable excitement is enough in another to produce cardiac strain and dilatation, and therefore medical inspection is absolutely necessary before the kind and amount of physical exercise for any child or youth is decided upon. In the University of Pennsylvania all students are obliged to take physical exercise as part of their course, but before they take it they are inspected medically. Any deficiencies they may have are ascertained, and the exercises they are required to take are of such a nature as to remedy their deficiencies and develop them symmetrically. Medical inspection may be looked upon as the foundation stone of physical exercise and we have all reason to be thankful that the present Government has rendered medical inspection in schools compulsory.

But physical education begins a long time before school life. It begins with babyhood, and the proper way to care for babies should be taught in all schools. I should not propose to establish dry classes upon hygiene which children would probably not comprehend, but I should like to see established in every school a class for the care of dolls. Every girl should have a washable, unbreakable doll which should be, for the time being, her baby. She should be taught how to wash dolly, how to feed dolly, how to treat dolly's sore throat or stomach ache, how to make clothes for dolly, how to take dolly out for exercise, how to hush dolly to sleep, how to provide dolly with fresh air and how to protect dolly from chills. In fact all the information that the girl will afterwards need for bringing up her own babies might be imparted in a concrete form in a way that

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they would enjoy and in a way that could be remembered in dolly's class.

But what are the boys to be doing while the girls are learning how to tend dolly? Some of them may be learning gymnastics with apparatus on the parallel bars, on the horizontal bars and on the horse; others again may play games of ball, or others again may try their strength, in jumping, in obstacle races and in various games. Perhaps there is no drill which is more perfect than that which is insisted upon in cricket and boating and football, but only those who form the team enjoy the privilege of having this training. What we want is that every boy should have it, and this can hardly be done in any other way than by various forms of drill. Drill is very monotonous and may be greatly relieved by allowing the boys to learn to shoot, just as the girl's interest would be awakened by dolly. The objections to boys learning to shoot are the risk and the expense. Both of those may be reduced to a minimum by making the boys shoot with percussion caps at candles. At four or five yards the candle can be extinguished by the air issuing from a musket when the percussion cap is exploded, but the aim at the bottom of the wick must be nearly as accurate as to make a centre at a hundred yards. It might be held out as an inducement to them that the best shots would be allowed to practise with a Morris tube, and later on they might even learn the use of service rifles. The old war game such as "I spy" and "Prisoner's Base" might be adapted to modern warfare, and J. Fenimore Cooper's novels might be used to teach scouting to the bands of white men or Indians into which the boys might divide themselves. Some people might argue that such a course would tend to foster a spirit of militarism in this country. For my own part I believe that it would just be the reverse; that such training would greatly help boys to become volunteers, and that with an almost universal system of volunteering we might lessen our Army without risk, keeping a corresponding amount of tax money in our pockets, and live free from the dread of foreign invasion on the one hand, and from universal conscription on the other.

In order to ensure such a desirable end we require the co-operation of every man, woman, and child in the country, and for the purpose of obtaining this the National League of Physical Education and Improvement has been established. The object of the League is not to displace any of the agencies at present working for the health and welfare of the people, but to make them known to one another, to ascertain how their work can best be supplemented when it is deficient, and to extend the benefits of physical training throughout the whole country. It thus hopes—

1. To save the babies.
2. To help the children.
3. To train the youths.
4. To instruct the parents.
5. To lessen the drink.

It is not a year since it was incorporated, but the good results of its action are already manifest, for it decided that the first object it should try to secure was compulsory medical inspection of schools, which it felt to be the foundation stone of physical education. It sent a deputation, on February 27th of this year, to wait on the Minister of Education. He expressed his sympathy with their requests, and now I think we may look upon medical inspection of schools as an accomplished fact.

Next we want the systematic teaching of hygiene by classes for "Dolly," then a pure milk supply, visitation of mothers, feeding of children, and in turn everything required to make us a free, healthy, strong, wise, and moral people.

FUTURE WORK IN ENGLISH EDUCATION.[1]

By Prof. M. E. SADLER, LL.D.

DURING the last ten years more thought and labour have been given to educational questions in England than at any earlier period in our history. If we compare the present state of things with that of a decade ago, we have good reason for encouragement and hope. Great additions have been made to the number of our schools and universities; within the last six years six universities in England have been either reconstituted or actually refounded, two in Yorkshire itself; great changes have been made in the machinery of educational administration, and an even greater change has come over the attitude of mind with which thinking people approach the question of what our schools should teach, how they should teach it, and what should be the social purpose underlying and inspiring their work. We have moved, often unconsciously, from our old moorings. A strong current which we could not resist has shifted us from where we lay, more or less comfortably, before. And we have had to move in a fog, a puzzling and dangerous fog, now impenetrably thick and now lifting enough to show that we are moving in strange waters. First on one side and then on another we have heard angry cries at impending collision. But the current carries us on amid conflicting advice as to the handling of the boat, and much discord of opinion as to whither we are really going.

If, however, we review the general course of events in English education during the last few years, certain changes stand out conspicuously and call for notice. There has been a great growth in public control over educational work. The chief tendency of recent legislation has been to strengthen the powers of the Board of Education on the one hand and of the local authorities on the other. It is true that many of these powers have not yet been fully exercised, but they have been granted, often without serious challenge, and they lie in reserve. Whether in course of time the enforcement of these powers will come chiefly through the central authority or through the local authorities is still uncertain. The cantonal principle and the national principle are struggling for the mastery. Probably neither of them will completely prevail. But considerations of finance, the growing need for increased contributions from the Treasury in relief of local rates, and the accumulation of experience in the very large and widely distributed staff of the authority point towards a steady increase in the power of the Board of Education to press for change, partly through the direct exercise of the power of the purse, partly through the action of local authorities taken in response to its own steadily urged requirements.

Secondly, we have realised more fully than heretofore the need for greater unity of purpose in the different grades of education, and the dependence of what is attempted at one stage upon what has been accomplished in another. For example, we have recognised the fact that technical instruction cannot be built up as a detached system by itself. In its higher forms it has to rest upon a long and carefully organised course of secondary education; in its more elementary grades upon a sound basis laid in the primary and higher elementary schools. There are a number of frontier questions. The need of adjustment between the methods of teaching in the infant school and those employed in the junior classes of the senior school; the waste of effort caused by a sharp break of

[1] From the presidential address to the Educational Science Section of the British Association at its meeting at York, 1906.

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gauge at the junction between the public elementary and the older type of secondary school; the impossibility of making an effective reform in the curriculum of preparatory schools without a modification of the requirements of the entrance and scholarship examinations at the public schools, are all frontier questions, the consideration of which has forced upon us the need for greater unity of plan in our educational system.

Thirdly, a wholly new stress has been laid upon the physical side of education. A systematic physical training must be regarded as the essential part of the daily work of every school, and will be found as beneficial to the intellectual and moral development of the scholars as to their bodily condition. For guidance in the educational treatment of every child according to its physical need; for the detection of defects in eyesight, in hearing and in teeth; for marking the symptoms of organic disease, we require systematic medical inspection of all school children at periodical intervals, especially in schools in poorer districts. The crux of the difficulty lies in getting the parent to act upon the medical inspector's report. But the majority of parents, especially when interest in the matter was shown by a personal visit to the home, would take the necessary steps to secure the medical treatment required. Where help was necessary, it would not be difficult, through the co-operation of charitable agencies, to secure it. And in cases of obstinate neglect the law should severely remind the parent of his responsibility. But to improve the schools and the physical care of the school children is not sufficient without reforming the state of many of their homes also, and without a great change in some of the conditions of industrial employment. Where the insufficient feeding or the wrong feeding of some of the children is found to defeat the work of the school, the real cure of the mischief lies in dealing with the parents, with their economic weakness or ignorance or wastefulness or insensibility, as the case may be. Where the children come to school exhausted by the strain of long and late employment out of school hours, the remedy has to be found in stringent regulation of the use of juvenile labour, and, so far as may be, in the prohibition of those forms of premature wage-earning which are fatal to the gaining of industrial efficiency in later years. Thus at point after point purely educational questions are implicated with economic and social problems, and we are forced to the conclusion that educational reform in any true sense of the word involves the intrepid handling of evils which lie outside the class-room and affect the home life and economic welfare of parents and children alike.

Great changes are coming, and coming in the right way, by individual effort responding in many ways to a new sense of national need, as well as by a gradual reform from within of many old institutions which have struck their roots deep into the national life. And, if we extend our view to what is going forward in Scotland, Wales, and Ireland the same impression is confirmed. It has been and is the good fortune of England to receive educational stimulus of different kinds from each of the other parts of the United Kingdom. Scotland, above all, has during the past century and a half taught us many lessons. And we have only ourselves to blame that we have not learnt from her many more. One of her lessons, that the higher educational opportunities should be brought within the reach of every lad of promise, we have at last taken to heart seriously with already fruitful results. Nor ought it to be forgotten how much stimulus and quickening of purpose we have derived from the zeal and courage of America, from the diligent pains, the thrifty but never parsimonious management and skilfully directed efforts of German education; from the very practical patriotism of Denmark, and from the brilliant renaissance in France. In education one nation is foolish to attempt a slavish copy of another, but even still more foolish to refuse to learn from it. And the result of all these divers influences on English education is that much more that is hopeful for the future is quietly taking place in English education than any one observer can realise.

The leaven is at work. If we were informed of a similarly fruitful movement in educational opinion in a foreign country we should be ready at once to admire and draw a moral from it. Let us not deny ourselves the pleasure of deriving encouragement from what is taking place among us at home. It was indeed high time for a great change, for I suppose that no one who endeavours to look upon English education with a candid eye can but admit that in no other civilised country have so many otherwise intelligent people been habitually indifferent to education, or unaware of what it may be able to do.

In spite of the fact that the suggestions to teachers in the elementary schools, issued as a Blue-book by the Board of Education, has had a sale equal to that of a popular novel, I am afraid that great tracts of this habitual indifference still remain undisturbed, and it must be admitted that in England, as compared with the best of Scotland and Germany, the home does little to co-operate with the work of the school; that manifold class separations have prevented the growth of unity in our school system—class separations which seem to me not to have disappeared, but to have been gathering into two large groups lately in educational work, and therefore to have reduced the amount of intricacy and the difficulty originally made by both; that we have been very wasteful of the more ordinary kinds of intellectual material; that we have done pitifully little to teach the mother tongue; that we have done far too little in our school lessons to kindle the imagination which, on social, on political, on economic, and on every ground we greatly and urgently need; and that by our worship of examinations we too often encourage, on the part both of teachers and of learners, the wrong attitude of mind.

On looking at the matter as a whole we have good reason to feel that during the last ten years the mind of the nation towards educational matters has significantly changed. If truth be told, we are worried and puzzled at the questions involved. But I make bold to say that we are perfectly right to feel worried and puzzled—that the central difficulties of the whole matter are the outcome of a profound change in our mental outlook, due to scientific investigation and to an upthrust of new social forces and ideals which is due in a great measure to the same cause; that our best chance of gradually finding a right solution for our difficulties lies in discarding the idea that somewhere in the world there is a magic formula in education which can heal our troubles, and that we should rather recognise the need of patient and systematic experiment in new educational methods and forms of training.

It has been my duty during the last two or three years to be allowed by a number of local educational authorities and others to see something at first hand of many different kinds of education in typically different parts of the country. Might I venture very briefly to summarise the conclusions and impressions which these inquiries have made upon my mind? In the first place, I am profoundly impressed by the differences between different districts in this country, differences in economical need, and, what matters far more, in psychological outlook upon educational matters.

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If there is one country in the world where a rigid cut-and-dried State system is quite inappropriate, it is this country.

Secondly, I feel that we cannot be too grateful for the number of men and women all over the country, teachers and administrators and social workers, who are devoting to the question of the public welfare an amount of thought and time and money which I think, at any rate, is not surpassed in any other land. And we may be thankful for the fairness of mind and temperateness of judgment which mark their outlook on educational affairs.

I am also deeply impressed by the inevitable expense of education—impressed by the necessity of our doing much more than we have yet done, and yet by the grim figure of the ratepayer standing behind these iridescent hopes. I am convinced that we should do wisely in educational matters to try to carry the mass of the people along with us, and not to go too far ahead of current opinion. Things are moving, and people listen to argument, and I think improve the case that is put before them by their deliberations and criticisms. Much has been started during the last few years, and we may well be content to watch for the slow outcome of much that has been done.

Again, I think that we know very little about what is going on in England itself. I suppose that if anybody wished to say what the curriculum of all the great public schools was at the present time, how much time is given in each form to each subject, how many exemptions were allowed, and what kinds and degrees of specialisation were permitted, he simply could not answer the question.

Is it not much to be desired that we should have publicly on record a real description of what is actually going forward in English education of all grades at the present time? Then this is a suitable occasion to plead for a systematic, periodic series of physical measurements of children in all schools as a basis for future social conclusions and scientific inquiry. Much more might be put together and published about the remarkable variety of work and change that take place in our English schools. We need something like an inventory of educational effort intelligently written, and its bearing shown upon the economic and social needs of the nation. We may welcome the new duties which are to be placed upon His Majesty's inspectors of taking these wider surveys of educational work and considering the relation of what is done in schools to the need of the communities in which the schools are situated. Is it too much to hope that some time the central authority will regularly publish these reports and current notes, and that every teacher and every member of a local authority should be able to receive regularly, and without trouble and without payment, each new number of the series from headquarters? We need much more cross-fertilisation of ideals through the regular publication of the results. We have much to learn from the freedom with which the great American central offices issue, without charge and abundantly, information to all who ask for it. The great thing is that we should not have things forced upon us by the central authority, but do them willingly and gladly in our own way; and we are far more likely to do that if we are continuously thinking of the matter and refreshing and stimulating our mind by a knowledge of what has been actually accomplished. Then in what remains for us to do will it not be wise to look to the growing points in the present educational situation, and then to encourage growth from those points, instead of wasting a good deal of time on what may be almost regarded as dead tissue?

The following seem to be the great points in English education at the present moment. First, the new keenness on the part of many intelligent workmen to get the elementary schools better, to have more individual teaching in them, to have fuller staffing in the high standards so that there is less marking time in the last years of the course, and then to have connected with the elementary schools, and in sympathy with them, a new type of school which provides a higher education to about fifteen years of age, and then a carrying forward from that of technical and physical education in evening classes well graded through the district; and for adult workers a further education, which is not simply bread-winning and technical—excellent as that is—but which has a touch of imagination and humanity and civic idealism about it as well. I take it that that is one great and continuous line of the light across the educational situation, one that we ought to watch, one that we ought to welcome and encourage. And what has been done along that line will stimulate another line altogether to adjust it to the new conditions.

Then further, no one, I think, can visit school after school without being impressed by the keenness and vitality of interest in those class-rooms where practical science work and manual work are being done. We are not here to plead for science against the humanities, or for the humanities against science, but I think we may indeed rejoice to see a new and kindling interest in our education through the greater development of practical studies.

And thirdly, it is striking how many of the great employers of labour during the last two or three years have shown a new and welcome interest in the problem of encouraging education among their workpeople and apprentices. It is most striking in the case of the railway companies and the great engineering firms, and it is spreading from those firms to many other industries. Then there is a growing keenness for better physical training, a physical training which shall not end with the elementary school, but be carried on through adolescence and be part of the obligation of each individual to the community. But if we are to help forward the education movement at these points do we not need much more carefully planned and systematically watched educational experiments to see how to meet the need thriftily and efficiently? I mean experiments which will be thought out beforehand, continued for a sufficient period of years, in which failures would be as frankly recorded as the successes, and to which the results, not necessarily, I think, under the name of the school or the teachers, but possibly under numbers, should be regularly distributed among all concerned.

The first experiment which I would commend as greatly needed is one for the better classification of the children in public elementary schools with regard to their different rates of mental growth and different intellectual attitudes. Valuable work on this subject is being done by Mr. Lauth. Do we not too much in our present system of elementary education treat quite different types of children too much alike? Is not one of the most necessary things for social and economic well-being the greater individualisation of English people, especially through the course of primary education? The sifting out of the defective children is the beginning of a process which I, for one, hope to see carried much further. In the town of Mannheim the Superintendent of Schools has arranged a subsidiary department in the school to which children of slower growth may be temporarily transferred for separate treatment and teaching until such time as they are able to take their place again in the main department of the school. In many cases where the students are very large in number there are divisions, one for the quicker and one for the

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slower children. But do we not need to push this a great deal further, and make much more distinction between different types of mind and rates of intellectual growth from the bottom of the school upwards. It means smaller classes, and smaller classes must be very expensive, so expensive that I think we ought to try by experiments to see what we can do effectively to individualise the children by dividing classes for different parts of the work, by encouraging private study on the part of some of the children to a much greater extent, and by massing groups of children more together for certain subjects.

It would be an excellent thing if each great local authority would have two or three of its elementary schools set apart to work out the educational problem and the financial problem really involved in giving every child in the school an individual and suitable training.

Then it is desirable that we should have in more of our districts a new type of elementary school tried, with far more manual work in the curriculum, with a great deal of physical training, and much simpler literary and arithmetic training. We have a lesson to learn from the industrial schools, and I cannot help feeling that, with all the good intention in the world, the present curriculum of the ordinary school is too ambitious and too varied.

Then we need a very careful working out of the course of study and of training in *esprit de corps* in higher elementary schools between the years of twelve and fifteen—careful experiment as to how to adjust the studies in those schools to the real needs of different kinds of practical life, and at the same time how to keep fresh and strong a literary interest and feeling of civic duty. We need, again, a carefully watched experiment as to the actual results of postponing the beginning of Latin as a regular school subject until twelve years of age. We wish to know how quickly clever children who begin late can actually pick up to the standard reached by those who have begun the language much earlier. We need, I think, to know more thoroughly than at the present time what such a change as the postponing of Latin until twelve would mean actually to the normal standard of scholarship at the head of the classical secondary schools. We need a careful comparison of the classical attainments actually reached in the Gymnasien in Germany, where this system has for some years been on trial with good results, with the classical attainments of the boys at similar ages in our own classical schools. Further, a comparison should be made of the *general* attainments of the boys in the same two groups of schools. If it is possible to defer until twelve the beginning of Latin as a regular school subject many difficulties arising from the break of gauge between primary and secondary education will be found to be happily modified.

I desire next to direct your attention to what is at once an urgent and extremely difficult problem in our English education—I mean the waste of intellectual power and the waste of moral discipline which arises from children leaving the elementary school at thirteen or fourteen and passing outside altogether from discipline and educational care. The problem of the right education of boys and girls during adolescence is only just beginning to receive the attention which it deserves. But can we live in our great cities without having an uneasy feeling that modern conditions of city life and of city employment, with its opportunities for earning a comfortable wage quite early, and with its opportunities of excitement, are really imperilling the stamina of many of the boys to whom we might look forward to be the recruits of our skilled industries, and to many girls to whom we look to be the mothers of good and healthy homes in the future. It is much to be feared that certain phases of modern industry which depend on the practically unskilled employment of boys and girls as they are turned out of the elementary schools are in part parasitic in character, and, maybe, get more than they ought to have, and more than their promoters realise they are getting, of the moral force and physical strength of the nation.

In the year 1902, of the whole population of London between fourteen and twenty-one only 15 per cent. were actually in attendance at the continuation schools under the then London School Board. If we double that (and it is an excessive estimate) for the number in the evening classes under the then Technical Education Board, we come to 30 per cent. only of these young people who are under educational care during those critical years. In 1904, in Manchester at least 14,000 between fourteen and sixteen were not in evening schools or day schools. The conclusion which is being forced, I think, on the majority of observers is that we cannot afford to allow this leakage to go on. We are in the position of people who have laid down a costly water supply and then left a hole in the pipe just behind the tap. Mr. Creasey in his excellent book on technical education in evening schools, and the authors of "Studies of Boy Life in our Great Cities," issued by the Toynbee Trust, have all agreed that something must be done to require in certain forms continued education during those critical years. Out of seventy-six teachers and experienced administrators in all parts of the country whom it has recently been my duty to consult, no fewer than fifty-two were in favour of some form of obligatory attendance at continuation classes.

During the last two years there has been a remarkable improvement in the organisation of evening schools in many industrial towns in this country—an improvement due to the labours of the local authorities and their organisers, and to the wise counsels of the Board of Education. I wish to point out what has been done in Halifax. Last year, in Halifax, of all the boys in the borough of thirteen, fourteen, and fifteen years of age who had left the day school, 69 per cent. were in the evening classes, and 96·7 per cent. of the boys enrolled were attending three evenings a week; 25 per cent. of them had not missed a single attendance, and 41 per cent. had made between 90 and 100 per cent. of attendances. That has been done through good organisation on a voluntary basis, by grading the schools skilfully, by wise inducements to punctual attendance, and also by making the courses of study bear directly on the varied trades and needs of the borough. In the rural county of Cambridgeshire there is, I believe, an evening school in every parish, and I believe I am right in saying that, as the result of many years of careful work and encouragement, 60 per cent. of the boys who remain in the county after leaving the elementary schools are to be found pretty regularly attending the evening classes.

There are one or two cases of wise and liberal action on the part of employers of labour to which I will allude. At Messrs. Rowntree's cocoa works in this city all girls under seventeen are required to attend a school of domestic economy, cookery, and so forth two hours a week during work-hours in an excellently planned and well-taught school, maintained by the firm at its own expense in the works. There are three teachers; the school is under the supervision of the Board of Education, 520 girls are in attendance, and the results are most encouraging to those who have tried this valuable and epoch-making experiment. Messrs. Cadbury at Bournville require all their

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workpeople under fifteen to attend the gymnasium twice a week. At Messrs. Crosfield's, of Warrington, attendance at evening schools, greatly helped by the firm, is compulsory for all boys and girls employed under seventeen years of age, and the hours of work with the firm are so short as to make this attendance possible without undue fatigue, and all boys and girls of fifteen (thirty boys and twenty-five girls) are sent to learn swimming at the town bath.

Very great as is the value of this voluntary work, it does not touch the mass; it does not touch that huge residuum which we feel is drifting off, after the elementary school, into physical and intellectual disorder, losing the habit of work, losing the habit of discipline, becoming casual, losing exactly the powers of mind, body, and character which are needed if they get the opportunity to learn a skilled trade.

But shall we not conclude that it is no good merely to make attendance at existing continuation schools compulsory unless we touch as part of the problem the question of the hours of late work of juvenile workers? The remedy will lie in throwing a statutory obligation upon all employers of juvenile labour up to seventeen to facilitate attendance of their young people at evening classes without undue physical overstrain. The local authority should act in concert with the employers and the representatives of the workers in each trade to plan a course of study in the evening schools which will be technically useful to those who receive it, which will at the same time be beneficial to them, and which shall not lose sight of the civic purpose.

This is exactly the stage through which Germany has passed. Prussia is organising, by local option in district after district, obligatory attendance at continuation schools by throwing on the employer the duty of facilitating the attendance of his own workmen at such schools, and permitting the local authority to make such attendance obligatory on boys, or, if they wish it, on girls, within a short period of years as may seem to them suitable. In varying degrees, attendance at continuation schools is compulsory in a number of other German States, viz. Bavaria, Würtemberg, Baden, Saxony, Saxe-Weimar, Saxe-Meiningen, Saxe-Coburg Gotha, and Hesse.

In Switzerland attendance at continuation schools is, in part if not wholly, obligatory in seventeen out of the twenty-five cantons for boys, and in one canton for girls. I should like to see a beginning made by some local authority's requiring attendance at a course of physical training for all boys and girls up to seventeen. But we must also raise the level of the primary schools by quickening the intellectual power of the teaching through making the number in the classes smaller. We must develop our secondary schools in order to spread a wider educational outlook among the employers and foremen. And these two changes, working together, will, I believe, steadily and at no distant time lead us to the conclusion that it is not only necessary but wise to make some measure of attendance at continuation schools obligatory for boys and girls until they are seventeen years of age, leaving the details to local option, and encouraging those districts which adopt compulsory attendance by a double grant.

There are three great names in educational history connected with the county in which we are met: Alcuin, the head of the great school at York, who organised for Charlemagne the palace school at Aachen; Roger Askham, of Kirby Wiske, near Northallerton, a friend of Lady Jane Grey, and the teacher of Queen Elizabeth, who among older writers on education was unsurpassed in his psychological analysis of the different types of mind with which the teacher has to deal; and Joseph Priestley, man of science, philosopher, and teacher, who opened out for the middle classes a new ideal of modern secondary education, insisting that the studies of the secondary schools should be brought into real touch with the needs of modern civic life, and who wrote perhaps the best essay in the English language against any undue State monopoly in the control of national education.

Have not each of these great Yorkshire leaders their message for us to-day?—Alcuin to remind us that, whatever else is done, the nation must educate its leaders; Askham to remind us that, in order to individualise our scholars, we must distinguish between their aptitudes and natural rates of individual growth; Priestley to remind us that the key of the situation lies in getting new ideas and greater keenness into the secondary schools of middling rank, and that we should do nothing to weaken individual initiative and private experiment by taking the tempting short cuts offered by excessive State control.

THE CONSTRUCTIVE WORK OF AN INSPECTOR OF SCHOOLS.[1]

By W. MAYHOWE HELLER, B.Sc.

THE fundamental functions of the inspector of schools are:—

(*a*) To see that value is obtained for the money spent on the educational work of schools.

(*b*) To suggest remedies where due educational economy is not practised.

Although the education authority (either local or central) is responsible for the educational policy of the schools, it must look for advice to its experts, the inspectors, who, better than others, can appreciate the educational needs of a district, and are in a unique position to evaluate the results of the various programmes and methods followed in the schools under their charge.

Whether an official of the local or central authority, the inspector is the servant of that authority; both he and the teacher receive common instructions from it. The first condition of efficiency is, therefore, that these instructions shall be wise, clear, and definite, and that they be loyally observed by teacher and inspector alike.

There is some difference of opinion as to the necessity of an inspector possessing teaching experience. But how can an inspector, without a varied teaching experience, and that experience of the right kind, presume to criticise the methods of others? The teacher is unlikely to respect or to act upon the suggestions of an inspector who has only a theoretical knowledge of education. The position of such an inspector is like that of the student in the practical examination who, having repeatedly failed to perform an experiment, thought he ought to receive marks for "knowing how to do it."

Assuming, then, that the inspector should possess successful teaching experience, he cannot be appointed at so early an age as hitherto. He should have experience of both primary and secondary schools, and should, if possible, have gained that wider outlook on school work and organisation which comes only with the responsibilities of headmastership. He must realise that education is an experimental science, and that scientific method underlies the whole art of teaching. He should be an enthusiastic student of educational progress in other countries than his

[1] From an abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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own, and be possessed of the personal qualities of tact, sympathy, and firmness.

In the primary school it is often desirable to have every subject dealt with by the same inspector; he must, therefore, have a thorough acquaintance with the matter and method of teaching all the principal subjects of the curriculum. If he is only slightly acquainted with some branch, he is almost certain to ignore it, and by so doing will in a very short time destroy any effective teaching of that branch. It is not to be expected that teachers will put themselves to considerable trouble in preparing and teaching a subject if the results of their work are neither asked for nor commented upon.

This does not mean that the inspector should be a "Jack of all trades and master of none," but he should at least be thoroughly familiar with the aims and methods underlying the teaching of all subjects. It is very desirable that he shall have reached a high academic standard in one or more branches. In the secondary school, it is not reasonable to expect one man to inspect constructively the teaching of all subjects; at least two types are necessary: a literary man with a knowledge of classics, English and foreign languages; and a scientific and practically trained man, with a knowledge of mathematics, science, manual instruction, geography, and, if necessary, domestic science and drawing.

The time seems to have arrived when the term *inspector* may be usefully abolished. Teachers need more than inspection, criticism, and censure; they need suggestion, help, and encouragement as well. The "inspector" would spend his day watching the teachers at work (under highly artificial conditions), would say little or nothing, go home, and write his report, giving praise or censure as the case may be; he would probably only have seen specimens of work in less than half the subjects of the school programme, and the lessons he listened to had probably been given to the same pupils before, and were, therefore, worthless as specimens of teaching. If we cannot change the title, let us think of inspectors as *school advisers,* who are slow to censure unless suggestions have been ignored and regulations infringed.

In nine cases out of ten a lesson given before the inspector is of no value as a test of teaching ability; neither teacher nor pupils are in a normal condition. The inspector can learn far more if he asks the teacher to question a class on a recent lesson, or, still better, if he questions the class himself; if he knows his business he will soon discover the manner in which the subject was presented.

At the same time, in his desire to remain on friendly terms with the teacher, the inspector must not pass by unnoticed matters of organisation and method that need reform. Some of the American schools, especially in the smaller cities, are good examples of what a complete absence of inspection or external criticism may lead to; with an environment of progress the schools are stagnant.

It is sometimes said to be undignified for an inspector to teach; the reply is that a good inspector cannot help teaching—it is his only method of getting into intellectual touch with a class. The inspector is, after all, the educational doctor of the school. He calls in a specialist when the case is outside his own experience; he should always adopt a cheerful bedside manner, but he must see that his prescriptions are carefully compounded, and that his orders are faithfully carried out; before he prescribes he must discover *why* the patient is sick.

The inspector is often placed in a serious quandary when writing his report. If it is constructive, as it should be, the school committee or governors are apt to mistake suggestion for censure, and often form very unjust opinions of the teaching staff. Even if the committee understands the report, the parents often do not, and it is doubtful whether the publication of such reports is desirable.

The frequent changes of inspectors in a given district has a very disturbing effect on the work of the schools. It takes a considerable time to know a large number of schools and teachers, and first impressions are sometimes wrong. An inspector must be left for several years in the same district before his constructive work can bear fruit.

One of the chief charges brought by teachers against the present inspection system is the want of uniformity in inspection standards. What passes for "good" with one inspector is only "fair" with another. The remedy lies with the chief inspectors. They should see that the instructions to inspectors (which are the common property of teachers and inspectors) are clear, definite, and sufficient, and that these are strictly observed. More frequent conferences among inspectors, and a loyalty to the decision of the majority, are desirable; there are very few questions on which real disagreement is possible.

In conclusion, it may be pointed out that the inspector has a magnificent field for scientific research around him. He can watch, foster, and institute educational experiments of all kinds; and by encouraging teachers to meet together to discuss the details, aims, and methods of their professional work, in which he should show keen interest himself, he can secure educational progress in his sphere of influence.

THE PLACE OF THE MOTHER TONGUE IN NATIONAL EDUCATION.[1]

By Prof. H. C. WYLD, B.Litt.

THE mother tongue is a subject of study which finds no place in the ordinary curricula of secondary schools, but which is provided for only in a somewhat specialised form in the universities, and therefore cannot be said to penetrate the fabric of national education very deeply. This is, however, the position of the native language in this country.

An elementary but systematic study of the English language has a general and special educational value.

I. *Suggested Division of the Subject in the School.*—The methods of "nature study" should be applied to *spoken English,* and the native language should be considered as a field for observation.

Such treatment has a threefold value: (*a*) cultivation of a fresh set of observational faculties—at present almost ignored by educationists—and consequent promotion of general mental alertness; (*b*) the laying of a sound basis for the study of other languages at a later date; (*c*) preparation for a true view of the nature of language in accordance with modern linguistic knowledge.

We should use the native language as an instrument for linguistic training: it should be the centre and starting-point of all language teaching.

II. *The Historical Study of English.*—The present methods of grammar teaching are mechanical and uninteresting.

The cardinal principle of instruction in historical grammar should depend upon the relation of historical with the practical observation of living spoken English. We must keep in touch with realities if we wish to realise properly the facts of linguistic development. The principles of evolution can only be learnt from a knowledge of the

[1] Abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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living language of the present day in which they are in operation.

Therefore (1) we should make the utmost of the familiar facts of spoken English, and learn many of the vital lessons to be derived therefrom before we inquire *how* and *from what* they arose. (2) We may then proceed to earlier forms of English, and relate them with the speech of to-day. Extracts from Chaucer may be read at this stage and studied systematically by tracing the changes which have taken place in pronunciation, vocabulary, accidence, and general grammatical structure. Here can be learnt the lesson of the prevalence of law; that is, of tendency to change along regular lines in the development of speech. (3) The last stage of the historical study of language in the school should be to ascertain in a general but definite way the relation of English to the other languages studied. This is the beginning of comparative philology.

We should make use of the natural and intelligent curiosity of the young concerning the meaning of the resemblances between, say, English, French, and Latin to impart clear ideas as to the historical connection of these languages, and to explain the difference between *cognate* words and *loan-words*, and so on.

The aim of the whole course is not specialism, but an intelligent knowledge and understanding of the familiar facts of everyday English speech.

An intelligent interest in the history of his own language and some knowledge of how the drama of development unfolded are as much an essential part of the liberal education of an Englishman as the history of the political institutions of his country.

The question is, Can anything be done to make the schools take up the matter systematically and seriously?

HISTORY AND CURRENT EVENTS.

"OF those who in August, 1806, read in the newspapers that the Emperor Francis II. had announced to the Germanic Diet his resignation of the Imperial Crown, there were probably few who reflected that the oldest political institution in the world had come to an end. Yet it was so. The Empire which a note issued by a diplomatist on the banks of the Danube extinguished was the same which the crafty nephew of Julius had won for himself, against the powers of the East, beneath the cliffs of Actium; and which had preserved almost unaltered, through eighteen centuries of time, and through the greatest changes in extent, in power, and in character, a title and pretensions from which their ancient meaning had long since departed. . . . From the days of Constantine till far down into the Middle Ages it was, conjointly with the Papacy, the recognised centre and head of Christendom, exercising over the minds of men an influence such as its material strength could never have commanded." With these words Dr. Bryce begins his epoch-making book on the "Holy Roman Empire."

THIS is an age of celebrations, specially of those which we call centenaries. Yet of all such anniversaries which have been kept this year are there more than Dr. Bryce's "probably few" who are remembering the death of the Roman Empire? Prof. Freeman, who was never weary of preaching the significance of the story which Dr. Bryce set forth in his book, used to say that he had for some years been contemporary with a man who had been Roman Emperor. Yet this Empire has gone so completely out of ordinary human memory that its very name has been forgotten, and many who ought to know better speak, and even print, of Emperors of Austria and Emperors of Germany. The Empire of Austria dates from 1804; there never has been an Emperor of Germany. Before 1804 there were no Emperors of any country. The word "Emperor" was used without any addition; yet, to quote once more Dr. Bryce, "it may indeed be maintained that in point of law the Empire was never extinguished at all, but lived on as a sort of disembodied spirit." Where is it now? What relics of it survive among us, their origin not remarked?

"PARLIAMENT has adjourned." "We are to have an autumn session." Do our readers see the inconsistency in these two phrases? Do they know the fallacy in the first of them? The phrases do well enough for a newspaper poster or the headlines of a newspaper column, but they are not technically correct. Parliament does not adjourn. Each house adjourns from day to day, or over the week-end, or for a holiday. That is its own action, though Charles I. thought in 1629 that he could order the House of Commons to adjourn, as, indeed, his predecessors had done and been obeyed. Much of the legal argument in Eliot's case turned on this very point. And the adjournment of either house does not put an end to a session. That can be done only by prorogation, and prorogation is a royal action. The King prorogues Parliament, and summons it for a new session. Thus, when Parliament meets in the autumn, it will not be a new session; it will only be the continuation of the session just suspended. Bills will not have to be introduced again. Indeed, the reason for this "autumn session" is that the Education Bill may have time to get through.

MR. FENWICK, M.P., said to the Northumberland miners at their meeting in July last, when they had resolved to cease their opposition to the Eight Hours Bill, that "without abating one jot or tittle of the opinions he had expressed again and again in regard to the Bill, he, as their servant, accepted their verdict, and he hoped, on the other hand, they would accept the responsibility of what was to follow." Mr. Burke, M.P., told his constituents at Bristol, in 1780, that "if the people should choose their servants on the principles of mere obsequiousness and flexibility and total vacancy or indifference of opinion in all public matters, then no part of the State would be sound, and it would be in vain to think of saving it." He spoke also in the same speech of "the little, silly, canvass prattle of obeying instructions, and having no opinions but yours (his constituents), and such like senseless tales which amuse the ears of unthinking men." He said further, "I did not obey your instructions. No. I conformed to the instructions of truth and nature, and maintained your interest against your opinions with a constancy that became me. A representative worthy of you ought to be a person of stability."

ITEMS OF INTEREST.

GENERAL.

A CONGRESS on popular education is to be held on September 15th to 17th, in connection with the Milan International Exhibition. The subject to be discussed by the congress as a whole is "School in general, as regards the wants of the popular classes under modern social conditions." In separate sections several topics have been arranged for discussion: auxiliary institutions of the primary school; professional teaching for male and female workers; and popular general culture for adults. The general secretary of the congress is M. Angelo Merlini, Società Umanitaria, Via Manzoni, Milan.

MISS ETHEL HURLBATT, principal of the Bedford College for Women (University of London), has been offered and has accepted an appointment as Warden of the Royal Victoria College, McGill University, Montreal, and will leave Eng-

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land at the end of the year. It is hoped that her successor will come into residence at the beginning of the Lent term.

MR. JOHN COBB, master of French at the Warehousemen Clerks and Drapers' Schools, Purley, has been appointed headmaster of the Archiepiscopal College, Halifax, Nova Scotia.

MR. H. H. ROBJOHNS, director of modern instruction at the Cheltenham Grammar School, has been appointed additional assistant in the Higher Education Department of the Education Office of the Kent County Council.

ALTHOUGH only two examinations, in January and June of this year, have been held under the present regulations, the Civil Service Commissioners have issued new regulations, to come into force after December 31st, 1906, for the open competitive examinations for junior appointments in the Supply and Accounting Departments of the Admiralty and in the Royal Ordnance Factories of the War Office, for second-class accountants in the Army Accounts Department and for examiners in the Exchequer and Audit Department. The limits of age are eighteen and nineteen and a half instead of eighteen and twenty. If an examination commences in one of the first seven months of the year, candidates must be of the prescribed age on May 1st of that year; if in one of the last five, on November 1st. The subjects are in three groups:—(i.) mathematics and English; (ii.) and (iii.) mathematics, French, German, Latin, Greek, history, chemistry, and physics. Of class ii. (lower standard), each subject carries 2,000 marks; of class iii. (higher standard), each carries 4,000 marks. From ii. and iii. candidates may select subjects, one of which must be a language, carrying marks up to a maximum of 10,000, making with the subjects of class i. (compulsory) 14,000 in all. The same subject may not be selected both in class ii. and class iii. The syllabus, defining the character of the examination in the various subjects, "will be issued in due course."

SCOTTISH.

THE Scotch Education Department is at present considering the advisability of altering the date of the Leaving Certificate examinations from June to April, and has invited suggestions or criticisms on its proposal from teachers and others interested. The advantages attaching to the present date are obvious in the case of schools whose holiday months are July and August, but in schools where the session is prolonged till the end of July, there has all along been the disadvantage that serious work is almost impossible after the examinations are over, and thus three or four weeks are to a large extent wasted. If the date were fixed just before the Easter vacation all schools would have an unbroken summer term for their ordinary work. In addition the results of the examination would be known before the schools closed for the long vacation. No doubt a good deal can be said for the Department's proposal, but the present arrangements are so convenient for schools closing at the end of June (and this comprises the large majority of schools) that any change will probably be strongly opposed.

MR. CATHCART WASON, M.P., has presented to the Secretary for Scotland a petition signed by fifty-two Scottish members, praying for an improvement in regard to the superannuation of Scottish teachers. The petition has been signed by all the Unionist members and by a large majority of the Liberal group. The memorial states that existing teachers in accepting the Superannuation Act had unfortunately placed themselves in a worse position than if they had refused to come under it, and had trusted to the public spirit of the various School Boards. The memorialists submit that this is not creditable to Scotland, and state that they will gladly support legislation to prevent valuable public servants who have devoted their lives to the public service from ending their days in want and penury. This is the best news in regard to superannuation that has been heard for a long time, and Mr. Cathcart Wason deserves the warmest thanks of every teacher for his work in this connection.

THE Secretary for Scotland, in reply to a communication from Prof. Chrystal, chairman of the Edinburgh Committee for the Training of Teachers, states that the financial responsibility for providing education in religious subjects has hitherto been borne by local managers. Any proposal, therefore, involving a transference of the burden to the Imperial Exchequer would, he considers, constitute a grave innovation which it would be exceedingly difficult, if not impossible, for the training committee to justify. This letter was considered at a meeting of the Edinburgh Committee, and it was unanimously agreed not to undertake the provision of religious instruction, but to offer facilities to the Churches interested for carrying on this part of the work themselves. Such religious instruction would form part of the regular curriculum, and would be examined and the results entered in the final certificate along with the other subjects. In respect of the difficulties raised by the Education Department, it is probable that the Churches will accept this compromise.

A MINUTE has been issued by the Committee of Council on Education in Scotland, providing for the distribution of the £13,000 that comes to Scotland as an equivalent for the £135,000 voted at the beginning of the Session to necessitous School Boards in England. By the terms of the minute the Department undertakes to pay three-fourths of the educational expenditure of any School Board above and beyond what is produced by a rate of eighteenpence in the pound. Thus if the total expenditure on education in a parish amounts to £500, and an eighteenpenny rate produces £300, the Department will pay three-fourths of the difference between these two figures, and the burden on the parish, instead of being £500, will be £300 (the product of an eighteenpenny rate) + ¾ of £200 (the difference between £500 and £300).

THE first exhibition of manual work under the auspices of the Edinburgh School Board has proved a great success. Crowds of people availed themselves of the opportunity to see the exhibits and to study the methods and aims of this important branch of school training. The aim in giving the manual instruction in the schools is not to produce a series of more or less useful models, but rather to afford the opportunity of associating drawing on the flat with common objects, and by means of the use of tools to form habits of observation, accuracy, and sound judgment. The objects on view serve to show that these ends are in large measure attained. Specimens of work done in the evening classes were also on exhibition. Here, however, the aim of the teaching is different. Technical skill is the great desideratum, and the models comprise doors, windows, casements, and intricate models of various kinds. In connection with the exhibition lectures on different phases of manual work were given by Dr. Gunn and Dr. Morgan.

MR. LOUGH'S committee, which was appointed to consider Mr. Wilson's Education (Provision of Meals) Bill, has reported in regard to the Scottish portion of its inquiry

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that the evidence submitted to it was not so complete as from England. Although none of the Scottish witnesses examined recommended that the responsibility for the feeding of children should be placed on the public authority, the committee adopts the view that there does not appear any sufficient reason for refusing to the Scottish local authorities the permissive powers which it proposes should be accorded to England.

ACCORDING to the new regulations for the training of teachers, junior students must receive their instruction at such schools as are approved by the Department for this purpose, regard being had to the accommodation, the equipment, and the provision of a sufficiently qualified staff. The Department states that junior-student centres should be, as a rule, secondary schools, or schools the staff and equipment of which fit them to prepare pupils for the full Leaving Certificate. Applications for the recognition of such junior-student centres should be made not later than October 1st, on special forms which can be obtained from the Department. Along with this form of application managers must submit a curriculum satisfying the requirements of the regulations on the junior-student stage. It should be specially noted that the curriculum to be submitted must include a scheme for the practical training of such students in the art of teaching each of the primary-school subjects. Managers must also be prepared to appoint in the selected centres a separate master of method, or to set apart one of the existing staff, and entrust to him the supervision of the practical training of junior students.

IRISH.

THE Department of Agriculture and Technical Instruction has issued for the forthcoming year (1906–7) a revised scheme for the administration and distribution of grants for technical schools and science and art schools and classes. It does not apply to day secondary schools, and is optional for one year, but after August, 1907, will be compulsory. The idea of the Department is that each student on whom payment is made should adopt a course of study beginning with the preparatory year, except, naturally, in the case of those who are otherwise qualified to begin specialisation. Students must be more than fourteen years of age on December 1st, and no grants will be paid for students for whom any grant is made by the Department under other regulations or by the Board of National Education.

THE intention of the Department is to prevent specialisation without a proper foundation, and the work is therefore divided into two parts, a preparatory course and specialised courses. To enter the preparatory course a student must be qualified to be placed in the sixth class of a school under the National Board. The subjects of instruction in this part will be: (*a*) English, (*b*) elementary mathematics, (*c*) elementary science or drawing, and each group must be taken. A student will be eligible for grants in this division for two years, and may then specialise. He must then take up a systematic course of study in two or three subjects, designed to extend over three or four years. A student may omit the preparatory course if he has passed the Junior Grade of the Intermediate Board or an equivalent. The subjects of instruction are grouped under five heads: A. commercial subjects; B. (1) modern languages, (2) mathematics, (3) higher commercial subjects; C. science (pure and applied); D. (1) handicraft, (2) domestic science; E. art subjects. Grants will be paid upon the total number of hours of attendance of fully-qualified pupils at rates varying from 2*d.* to 1*s.* 9*d.*, and these may be increased or decreased by one-tenth upon the report of an inspector.

THE rules apply mainly to evening classes, but may be applied also to day schools for apprentices and others engaged in business, to schools of art, to teachers' classes in technical schools, and to training colleges. The Department proposes to form a register containing the names of teachers who, after provisional recognition by the Department in any subject, have taught a class in that subject to the satisfaction of the Department for at least one session. A register for duly qualified teachers in all subjects is very much required in Ireland, and now that the English register is as good as abolished, those interested in Irish education should press for the extension of the principle adopted by the Department to all schools and branches of teaching; for if a register is needful for technical schools, why not also for day secondary schools?

IT is when one bears in mind general questions of education such as this that one finds the latest Report of the Intermediate Board (that for 1905, published this summer) so disappointing—a bare recital of facts without comment and without any appreciation of the position or progress of Irish secondary education in relation either to Ireland itself or to other countries. Former reports contained some reference to the desire of the Board to introduce inspection, but in this report there is not a word upon the subject. Has the Board abandoned its position? Last winter there was a loud outcry from managers and teachers about the diminution of the grants made by the Board. The Board passes this by; it neither expresses sympathy for the sufferers nor suggests any remedy for the future. To judge from its report, Irish education might be merely an inanimate machine, not a human instrument full of possibilities.

THE facts presented by the report may be briefly summed up as showing an increasing desire on the part of the Irish public to avail itself of secondary education with a diminishing income on the part of the Board which supervises it. The first is wholly satisfactory, the second wholly unsatisfactory. The number of students presenting themselves for examination in 1905 was: boys, 7,018; girls, 2,659; total, 9,677; the highest on record, being an increase on 1904 of 742 boys and 405 girls, or a total of 1,147, or 13·4 per cent. The number who passed was: boys, 4,942, or 70·4 per cent.; girls, 1,723, or 64·8 per cent.; total, 6,665, or 68·9 per cent. This percentage is higher than in any year since 1900. The number of exhibitions awarded was: boys, 258; girls, 84; total, 342. The amount of the school grants was £49,922; this divided among 288 schools shows an average of £173. If the scale of payments had been on the same basis as in 1904, £72,306 would have been required, so that by comparison the schools suffered to the extent of £22,384. But the Board's income decreased from £56,156 in 1904 to £50,385 in 1905. Besides the general grant, the Board allocated £2,784 in bonuses to schools for choirs and orchestras, and an additional £190 as prizes at a special competition for choirs and orchestras. The amount of the Preparatory Grade Prize Fund for 1905 was £1,956.

IF we look at the individual subjects, the lowest percentage of passes is in Greek, 60·9; shorthand is 65·7, and geometry 67·6. No other percentage falls below 70, while in nearly every science subject the percentage is more than 90. Next to English literature and composition, which is compulsory, and had 9,659 candidates, the highest

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total examined was in French, 9,156; then arithmetic, 8,062. There were 4,029 in Latin, 3,218 in Irish, and just over a thousand each in Greek and German. The boys' school receiving the highest grant was North Richmond Street (Christian Brothers), Dublin, £2,279; the only other boys' schools receiving more than £1,000 were the Christian Brothers in Cork and Blackrock College, Dublin. The highest grant for a girls' school was to the Dominican College, Eccles Street, Dublin, £657.

THE Board's accounts show that advances to managers of schools were made to the amount of £2,280; repayments amounted to £1,404, leaving the amount due to the Board at £17,051. The examinations cost £14,000, the examiners alone receiving nearly £6,000, while the awards amounted to just over £10,000. The cost of administration is £5,000. The reports of the examiners are published in a separate pamphlet.

WELSH.

AFTER the interesting announcement that there was to be a Welsh Minister appointed as head of the new Welsh Council of Education, a Parliamentary Minister without salary and without a Department in the technical sense of the term, it was a surprise to find the proposal withdrawn as suddenly as made. Mr. Birrell puts the matter: If the Welsh are content to be placed under the scorpions of the Treasury instead of under the whips of the Board of Education, that is their own affair. The Welsh members thought the Council a step forward. It will give Wales the control over elementary education, as the Welsh Central Board has had over secondary education, and it will set them to work without entailing additional expense on the Exchequer. Whatever differences of opinion there may be as to the *modus operandi*, there seems to be unanimity in the opinion that there will be a great advance in bringing elementary and higher education under a single authority.

ONE point on which we have laid emphasis in these columns, but on which too much cannot be said until it is remedied, is the question of staffing. In the county schools we believe the staffing is, one qualified teacher to about seventeen pupils. Probably the proportion ought to be something like one teacher to twelve pupils. The improvement in this respect that has taken place in the county schools is so great that we have no misgiving as to still further advance. But in the elementary schools in Wales the position of the staffing is deplorable. Barry is, we believe, unique, amongst educational authorities, in having one certificated teacher for every forty-two scholars. This is a great achievement, and we hope that Barry will improve upon itself as it has outdistanced the other authorities. But it appears that the county of Glamorgan, in which Barry is situated, a county which constantly insists upon its right to high proportion of representation on the new Welsh Council on account of its great population and high rateable returns, has one certificated teacher for every ninety scholars. Glamorganshire, therefore, has much to do before it reaches the standard of staffing of Barry.

THE other Welsh counties are sadly understaffed. Our contention is that with a Welsh Council interested in and controlling the whole of the education of Wales, it cannot long be overlooked that with secondary schools requiring a staffing of one teacher to seventeen pupils, something is necessary, urgently necessary, to be done to reduce such inadequate staffing as one certificated teacher to ninety pupils in elementary schools in any and every district. For Wales is well aware that some 80 per cent. of the pupils in the secondary schools come from the public elementary schools. Without the closest attention to the resources and equipment of the schools where the foundation of knowledge is laid, there is no security for sound education in those institutions themselves or in the very county schools which are supplied with pupils from them in so large a proportion. A council with an outlook over the whole field of education must perforce devote early attention to raising the standard of staffing. If the council to be instituted were to accomplish the one work of adequately staffing the schools, it would more than justify its existence.

THE training of teachers, too, will come more and more to the front. The Welsh Members of Parliament have sent a petition to the President of the Board of Education on the subject of the teaching of Welsh in Welsh schools. They urge that if the matter be not dealt with speedily, much trouble and expense will be caused to the various education authorities in the Principality. An adequate supply of (adequate) teachers of Welsh will shortly be required throughout Wales. Their request is, that the Board of Education should require all students in the Welsh training colleges who have come from schools in Wales to pass a qualifying examination in Welsh, or, in other words, "that Welsh shall be obligatory, instead of optional, for such students." The Board of Education is not usually adverse to making subjects obligatory on students in training colleges, but it would be helpful for those interested in education generally if in petitions of this kind the suggestion should be made whether it is proposed that the new obligatory subject should be in addition to those already required, or whether it is proposed in place of some subject already obligatory, but which could more suitably be dispensed with.

RECENT SCHOOL-BOOKS AND APPARATUS.

Miscellaneous.

Highways and Byways in Dorset. By Sir Frederick Treves, Bart. With illustrations by Joseph Pennell. ix.+ 376 pp. (Macmillan.) 6s.—Dorset is a beautiful county, full of interest to students of history and geography. The great heath between Wareham and Poole is in much the same condition as it was when the Celts wandered over it. On the coast to the west of this there are the coves and cliffs of Studland and Swanage, the Chesil Beach stretching for a distance of from seventeen to eighteen miles from the foot of Portland to Burton Bradstock, Weymouth and quaint Lyme Regis, to mention only a few places of varied character. The picturesque ruin of Corfe Castle, on the site of which Elfrida is said to have killed King Edward the Martyr; Dorchester—which has never been insignificant—and the famous school at Sherborne, claim the attention of the historian. The school was founded about 705, and was refounded by Edward VI. in 1550, being the earliest of the grammar schools we owe to that monarch. One clause from the statutes of 1679 reads: "Boys in the Upper School are to speak nothing but Latin in School and also out of School, wherever they shall meet, under pain of the severest correction." Latin was a living language in those days. Sir F. Treves is an entertaining guide, and the reader who travels through Dorset with this book in his hand will find that there is much to learn and love in the scenery, legends and spirit of the county. The natural history is, however, much more interesting than would be supposed from the scant attention given to it.

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Lectures on the Method of Science. Edited by Dr. T. B. Strong. viii.+249 pp. (Clarendon Press.) 7*s.* 6*d.* net.—At the summer meeting arranged at Oxford last year by the Delegacy for the Extension of University Teaching, a course of lectures was given by several distinguished men of science, the general theme being the application of scientific method in various departments of research. These lectures provided the material for the volume before us. Prof. Case deals with scientific method as a mental operation; Prof. Gotch with the rise and development of the spirit of science; Prof. Sherrington with the scope and method of physiology; the late Prof. Weldon with the problems of inheritance in animals and plants; Dr. W. McDougall with psycho-physical method; Dr. Fison with the evolution of double stars; Sir Richard Temple sketches the development of currency and coinage; Prof. Flinders Petrie describes the implications of archæological evidence; and the Editor, Dr. Strong, Dean of Christ Church, inquires how far the investigation of history may be pursued on scientific principles. The collection thus represents the views of leading authorities upon some of the most interesting questions in science, with particular reference to method of investigation, classification of facts and soundness of conclusions. We should have been interested in a statement of the value of scientific method in education, but the Oxford Delegates would probably have had a difficulty in obtaining a useful discourse upon the subject; as it is, the volume provides a very readable account of the foundations and superstructure of science, and forms an excellent introduction to a work like Prof. Pearson's "Grammar of Science."

Class Illustrations for the Study of Architectural History. Comprising the complete Series of 300 plates, as appearing in "A History of Architecture on the Comparative Method," by Prof. Banister Fletcher and Banister F. Fletcher.—We recently reviewed in these columns Mr. Banister Fletcher's admirable book on architecture. The publisher now sends us the whole series of plates, printed on separate sheets, and enclosed in envelopes, for class use. They are classified thus:—(1) Classic and Early Christian, 90 plates, 4*s.* net; (2) Mediæval (Romanesque and Gothic), 102 plates, 4*s.* net; (3) Renaissance and Modern, 75 plates, 4*s.* net; (4) Non-Historical, 36 plates, 1*s.* 6*d.* net; or 13*s.* 6*d.* net in all. Orders must be given for not less than five copies of any one section, or two copies of the whole collection. Lantern-slides of all the plates are to be had from Messrs. G. Philip and Son, 32, Fleet Street. The work is a standard work, and needs no further commendation from us. A series of large lecture diagrams (40 in. × 27 in.) are also advertised, of which particulars may be obtained from the publisher.

School and Sport: Collections of a Busy Life. By Tom Collins. xii.+268 pp. (Elliott Stock.) 6*s.* net.—This is a collection of disconnected and discursive anecdotes, all mixed together, on sport and school, fishing, country life, boxing on the ears, bridge, Greek, King Edward's School at Birmingham, Norway, with a few chestnuts about Calverley and others. It is really quite entertaining. Most of the stories are new, being Mr. Collins's own experiences; all are quite innocent and harmless; and there is a great deal of what appear to be excellent rules about fly-fishing, dogs, bridge, and other kinds of sport. We are bound to confess there is very little school in the book, which is only interesting to us professionally since it shows the disastrous effects of local influence on a good grammar school. Whilst the country as a whole is indifferent to educational questions, and the Board of Education is afraid to act on its own responsibility, the local bodies have a distinctly pernicious influence. Mr. Collins seems to have been a very good headmaster, respected by all his pupils, and we wish he had told us a little more about school and less about sport. The most remarkable anecdote in the book is that of "Lockyer, the great wicket-keeper." "His hands were a sight; the palms were driven in and the backs were convex from the constant impact of the ball." He must have been indeed a sight amidst his fellows with their convex palms and the concave backs of their hands.

Fictitious and Symbolic Creatures in Art, with special reference to their use in British Heraldry. By John Vinycomb. Illustrated. xvi.+276 pp. (Chapman and Hall.)—This is a very entertaining book. It is not a history of symbolism—that much needed work for which we are still waiting—nor a manual of heraldry, but it is a sketch of the symbolic treatment of living things in art, with special reference to heraldry. It begins with angels and archangels, and ends with the sea-dog. Although the treatment is somewhat scrappy, yet all through the author gives one the impression that he knows his subject, and he does not fail to bring out the principles which underlie it. The illustrations are excellent, and the book gains vastly in value by being printed on real paper. If we were to mention a quarter of the odd monsters in this Man's Book of Beasts, we should fill this page, so we must be content to ask whether our readers know what is a Cat-a-mountain, an Opinicus, a Tityrus, a Mantygre, a Baphomet, or a Manticora? Here he will find them all, along with Salamander, Basilisk, Cockatrice, and—choicest creature—the "Panther Incensed" (p. 200). There is an odd misprint on p. 220—*Emipusa* for Empusa.

Reform in Primary Education. By Dr. Hagmann. 1–161 pp. (Williams and Norgate.) 2*s.* 6*d.* net.—The last sentence of this book (admirably translated by the colleagues of the author at St. Gall) shows the spirit of the work: "The art of teaching is based on self-discipline: the gift is based on the longing desire to impart knowledge to children in a kind and loving manner: the art of teaching is a matter of the intelligence, the gift one of the heart." The writer might, in many ways, have been writing in England; at least, he is profoundly discontented. The perusal of his chapters on drawing, history, arithmetic, leaves us in some doubt of the vaunted superiority of the Swiss schools; and the suggestions are all good, but not very novel. When will writers attack the kernel of the difficulty—the large numbers in classes? We are greatly astonished at one sentence: "Physical geography has no connection with history." Surely no geographer would refuse to write: "History *is* physical geography, and physical geography *is* based on geology."

The Girls' School Year Book (Public Schools) with the Index of Schoolmistresses. Issued under the direction of the Editors of "The Public Schools Year Book." 420 pp. (Swan Sonnenschein.) 2*s.* 6*d.* net.—This work of reference is intended to do for girls' schools what the well-known "Public Schools Year Book" has long done for boys' secondary schools. Though the book may be commended as being a good first attempt at providing a trustworthy guide to public secondary schools for girls, it is at present by no means complete, several important and well-known schools having been overlooked. The publication will receive a hearty welcome from secondary-school mistresses.

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CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Subtraction of Vulgar Fractions.

THE convenience of always writing decimal or fractional part of a logarithm positively suggests an analogous method of treating the subtraction of vulgar fractions. Suppose, for example, it is required to reduce to its simplest form the expression $2\frac{1}{2}+3\frac{7}{8}-4\frac{5}{6}+8\frac{3}{4}-5\frac{7}{10}$. The method most frequently adopted, perhaps, for the simplification of an expression like this is to reduce the mixed numbers to improper fractions, express the fractions as equivalent fractions with a common denominator, and so on. A better method, of course, is first to separate the integral and the fractional parts of the mixed numbers in the given expression and write the expression in the form

$$2+3+8-4-5+\tfrac{1}{2}+\tfrac{7}{8}+\tfrac{3}{4}-\tfrac{5}{6}-\tfrac{7}{10}.$$

If, however, in separating the integral and the fractional parts of the mixed numbers we increase by 1 the integral part of every mixed number preceded by the minus sign, and instead of the fractional part preceded by a minus sign write its defect from 1 preceded by a plus sign, the expression will take the form

$$2+3+8-5-6+\tfrac{1}{2}+\tfrac{7}{8}+\tfrac{3}{4}+\tfrac{1}{6}+\tfrac{3}{10},$$

and the simplification of the fractional part will be effected by addition. A proper fraction preceded by a minus sign would, of course, be replaced by -1 + the defect of the fraction from unity.

The adoption of this method would, I believe, in most cases facilitate the reduction of fractional expressions like the one given above, and, while assisting beginners towards a proper understanding of the use of the minus sign, would obviate the risk of the mistake which not only beginners, but more advanced pupils, are apt to make—the mistake of neglecting the minus sign where the sum of the negative fractions exceeds the sum of the positive.

W. B. MORREN.

Aberdeen.

An Introduction to Astronomy.

IN the July number of your valuable magazine, in a brief review of my book on Descriptive Astronomy, the following sentence occurs: "In stating the work of practical astronomy, Prof. Moulton omits mention of spectroscopic observations, but it is scarcely too much to say that they form the most important part of modern investigation." While the book undoubtedly suffers much from sins of omission, the first part of the statement will give the reader such an erroneous idea of the stand taken in the book respecting spectroscopic investigations, that I shall esteem it a favour if you will quote the following from p. 14 of the preliminary outline, where it is aimed to give a brief glimpse of what is now important in astronomy:—

"The spectroscope, which is the chief instrument of astrophysical research, has been in active use in astronomy less than fifty years, yet its contributions to knowledge have been truly amazing. The results which it has furnished are the more precious, for they cannot be obtained in any other way; and, indeed, until after the application of this instrument to astronomical investigations, no one had the boldness to hope that the regions which it has revealed would ever be accessible to us. It furnishes us with no less marvellous information than the chemical constitution of the sun, and of stars so remote that it takes their light many years to come to us; it distinguishes for us luminous gaseous bodies from those which are solid or liquid; it tells us much of their temperature and physical condition; and it gives us the means of determining the rate at which we are relatively approaching toward, or are receding from, them. Its application to astronomical problems has been only begun, and no one can predict what the future developments will be."

This will indicate the frequent, though perhaps inadequate, references to spectroscopic work. For example, pp. 397 to 410 are given entirely to the discussion of the principles of spectrum analysis. The spectroheliograph is explained on pp. 429 to 431. The applications to the classification of the stars, the determination of stellar parallaxes, &c., are explained in as much detail as was thought suitable to an elementary text-book. F. R. MOULTON.

The University of Chicago.

ABSENCE from my library prevents me from referring to Prof. Moulton's book, but my recollection is that on an early page he states the work of practical astronomy, and, as mentioned in the review, does not include spectroscopic studies. The suggestion was not made that the results of spectroscopic research were neglected, but only that British work was scarcely presented in true perspective. The sentence in the review following that quoted by Prof. Moulton reads: "It is only fair to state, however, that astrophysical inquiries are surveyed, though the treatment cannot be considered altogether adequate from the point of view of the contributions made to this branch of astronomy by British spectroscopists." THE REVIEWER.

Geometry in Schools.

IN your review of my "Manual of Geometry" the hope is expressed that the course laid down therein may not be considered sufficient for the school treatment of geometry. Since the course definitely follows Schedules A and B of the Cambridge Previous Examination, and indicates proofs of all the theorems, which are followed by theoretical exercises in every case, it might seem to a less partial mind than my own to be sufficient for candidates for that examination and others of a similar scope. This scope is sufficiently well known; Schedules A and B cover much the same ground as the first six books of Euclid. Whatever may be the defects of the "Manual," it does not profess to extend further than this. W. D. EGGAR.

Eton.

IT is, we heartily grant, unfair to an author to criticise him for not doing what he expressly states he does not intend to do; but we understood from the preface that the "Manual" was meant for a school course of geometry, and the reference to Euclid as a university subject seemed to us to have little meaning except on the assumption that a deductive course of geometry on the lines of Euclid was unsuitable for schools. A school course of geometry should, we think, in its later stages be as rigorously deductive as Euclid's geometry, and should embrace more than is included in the "Manual." However excellent the Cambridge syllabus may be, it is surely unreasonable to suppose that schools are bound to limit themselves to it as the final expression of what constitutes a school course. THE REVIEWER.

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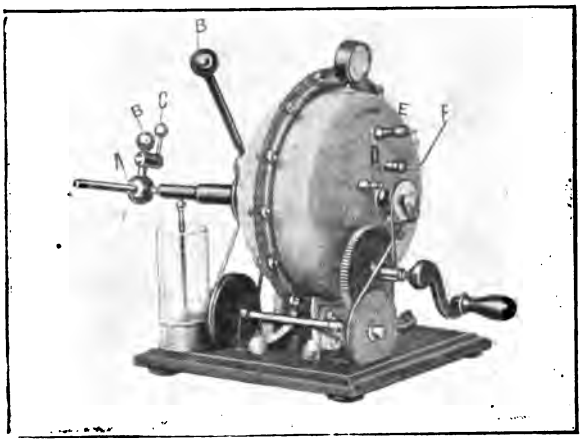

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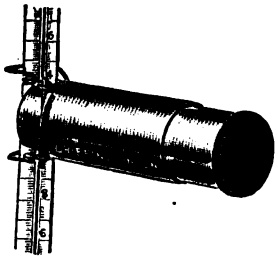

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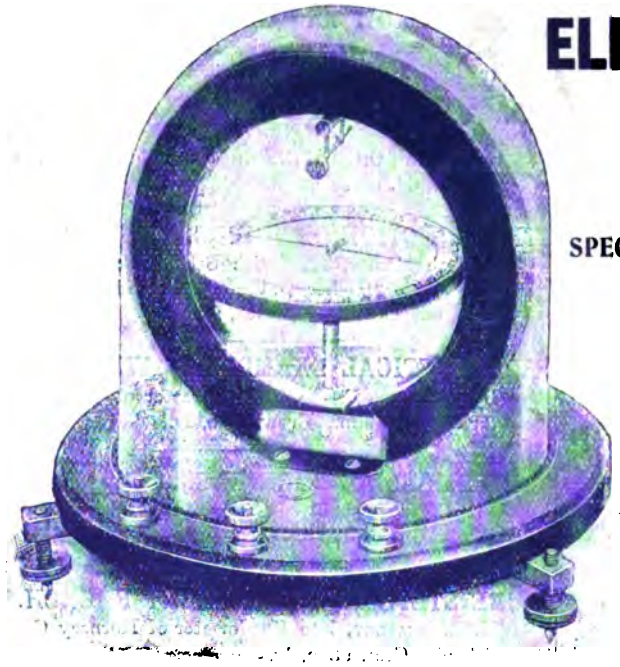

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To face first matter.

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The School World

A Monthly Magazine of Educational Work and Progress.

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THE SCHOOL LIBRARY AS AN AID TO FORM-TEACHING.

By the Rev. J. M. LUPTON, M.A.
Assistant-Master and Librarian, Marlborough College.

THE title of this paper suggests an obvious dichotomy—teachers and taught. The library, properly used, should widen the knowledge of the teacher, or make it more precise; it should help the taught to supplement the meagre information of the text-book, or to follow up the interest which the teacher has awakened. But there is an old proverb about bringing a horse to the water, and a school librarian is fated to pass a good many hours in his library, watching the unruffled surface of a pool to which few ever come, and fewer still come to drink.

That it should be so is to some extent disappointing and humiliating. There is our pool—if we may keep up the metaphor for a moment—full of delicious water, cool and inviting. It is set—at least I know of several that are—in a choice spot of the academic grove. All that surrounds it is fitted at once to charm the eye and invite to meditation. One might suppose that thirsty young souls would come and drink deeply of its waters, and that those whose privilege it is to be leaders among the throng would be among the foremost to slake their thirst. What does one find in practice? At preparation times, to drop the metaphor, the door is besieged by an eager crowd, who strive to secure the best seats. At other times a faithful few, busy, for the most part, with the preparation of tasks. And at others, again, a solitary librarian musing amid the shadows till the summons of a strident bell bids him exchange the silence of the empty room for the bustle of dinner.

Yet, though I sit here, pen in hand, to suggest some ways in which the library may be made to play a larger part in the economy of school life, I am inclined to doubt whether any great change can be expected at present, at all events, in the case of boys below the highest forms. School life is too well organised now for browsing—if I may be allowed to borrow the word from Ruskin—in a school library to be possible for either boys or masters, except to a very limited degree. For better or worse, the old days of slackness in form, and plenty of leisure out of school, are gone. A boy now, and his master too, has his day thoroughly filled up. He is doing allotted tasks for a considerable part of the time, and playing allotted games for much of the remainder. The gain in order, discipline, and efficiency is considerable; but a taste for independent reading seems still to wait the coming of the fairy prince. It is all very well to refer a boy to Macaulay's "Warren Hastings," or to "Barnaby Rudge," by way of supplementing his history, but your businesslike youngster may be pardoned if he declines the tempting bait on the ground that, where he hasn't time for both, the allotted lesson "pays" better. And shall I, his form-master, preach neglect of "prep."?

There was an institution of my youth that sought to combine the claims of preparation and independent reading in a somewhat ingenious way. It was known familiarly as "Sunday Q's," and, for the benefit of those who do not know it, I may perhaps be allowed a digression to describe it.

The theory was, I believe, that the New Testament was being regularly taught in form, while the Old Testament was left to be got up out of school. Consequently every Sunday morning we found—or our fags found for us—a piece of paper on the class-room door containing some six to ten questions, somewhat of the following description:—

(1) Discuss the reading and difficulties of St. Luke ii. 2.

(2) Write a brief account of the reign of Jeroboam II.

(3) What do you know of the Robber Council?

(4) Give a short account of your views on the duty of almsgiving.

Armed with a copy of the questions, a Maclear, and a Pinnock, one went to the school library. Alford, interpreted by some master-mind, to whom symbols resembling those of algebra truncated were but child's play, furnished the answer to No. 1. Pinnock or Maclear did No. 2. "Very good," you will say; "now came the independent reading—the introduction to more alluring bye-paths of knowledge."

Not a bit of it! The library was presided over by a gentle old man of great reading and infirm health, called—for no other reason that I could

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discover but *metri gratia*—"golden 'Ιωσήφ." To him, then, turned the inquiring throng. "I say! Joseph! Give us a book on the Robber Council." With unfailing skill, born either of long practice or profound knowledge, he would refer to volume so-and-so of some "Abridgment of Church History," and the passage, dictated by a clear-voiced youth, and duly altered by each scribe as he went along, was bodily transferred to the paper as the answer to No. 3.

The attempt to stimulate original research, or original thought, in answering No. 4 was equally doomed to failure. If neither the custodian, nor any book to which he could refer us, produced satisfactory views on "almsgiving," we had recourse to a "symposium" of the kind which has lately become familiar in magazines that wish to inform the impartial mind. We laid our heads together and produced a combined answer, of which each writer took down such percentage of the whole as industry, inclination, or a desire for marks dictated.

I expect the discerning reader will have seen from this the weak point of referring boys to books in the library, by cunningly devised questions or otherwise, as a means of persuading them to read more widely for themselves. From the nature of the case two things happen: (1) the library only contains one copy of the book recommended, and (2) the boys all want to use it at the same time. Hence the form-master, as it seems to me, is driven to one of two alternatives. Either he must be content to let the eager and industrious avail themselves of the wider source of information, and make no effort to exact it from the lazy; or he must be content to take a combined answer, representing the independent labour of one and the unintelligent copying down of many.

For the same reason I have found it practically impossible to refer to a "good poetical translation" of a classical poet, or to send readers of the *Alcestis* to study Mr. Browning. Either one shrill voice reads it out to the rest, which is trying to those who are otherwise employed; or one, speedier or more pushing than his fellows, secures the coveted volume, and the rest are left smarting under a sense of injustice.

I am afraid the only practical plan seems to me to be for the form-master to read passages to his form and explain, as he goes along, the excellences of what he reads, and why it is superior to the jargon into which boys conventionally translate their authors. Any master who does so is certain of a welcome, and a hearing at least outwardly attentive. I believe, however, that if he does this, except as an occasional surprise, he will find that the speculative youth will neglect to prepare his next lesson, and a few questions on what has been read will lead him to doubt whether the attentiveness was not assumed, and whether a large number of minds have not all the time been engaged in computing the chances of victory in an approaching house match.

Much the same difficulty has to be faced also in the teaching of history. It is tempting to think that the school library is at hand to supplement the meagre information of the text-book. But either all the boys must be provided with copies of the work to which reference has been made, or else the form-master must be content to hope that a few of the better boys will have read for themselves, and to know that the majority of the rest have not.

There is not, to my mind, the same objection to reading aloud to the form selected passages from a larger work on history, that there was in the case of translations of an author. The boys are equally ready to feign attentiveness, but it is easier to stimulate attention and to fix what has been read by subsequent questioning. And even if the majority assimilate but little, it is worth while to face that, in order that the better boys may profit by the flood of light which a passage, say, of Green or Froude throws on the scattered and isolated facts of the book read in form.

Do I seem needlessly pessimistic about the value of a school library as an aid to being taught in form? As I think of the title of this paper, I seem to be playing the part of Balaam.

From the point of view of the thesis which I am supposed to be defending, the case is somewhat desperate. The school library cannot, in my opinion, be a direct aid to form-teaching, except to a very limited extent. But, if I might reverse the proposition, the form-teaching ought to be a considerable aid to the use and appreciation of the school library. If the master is content to sow seed in faith, and not expect immediate results, we may yet have to thank him for a harvest worth reaping.

For the case, I take it, is somewhat thus. Our public schools have been for some years developing our boys in body and character, and in mind also—but the latter along rather limited lines. Without going into so wide a question as the whole of our public school education, most men will admit that the parents of to-day are neither well read nor naturally fond of reading, and their sons take after them. Their daughters are receiving an education which closely resembles that of the boys, and is not, so far as my observation goes, breeding in them any great love of reading for its own sake. It seems probable, therefore, that the next generation will inherit a distaste for study from its parents on both sides. And the case is made worse by the fact that the masters of the day are drawn from the same boys, of an older age, with exactly the same tastes; so that we are in a vicious circle. There are, it is true, shining examples to the contrary. But, after several failures, headmasters seem shy of appointing men of a studious turn, because such men have been found in the past to be incapable of keeping order, and their lack of sympathy with school games impairs their efficiency as house-masters.

In saying all this, I am far from supporting the common indictment of our public school system. Its faults are patent enough. But I have not yet met a critic who, really knowing the facts, could suggest a practical remedy. It is easy to say "You

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ought to be fonder of books—both masters and boys." I quite agree. But I have not yet heard of any rapid method which shall enable us to keep the merits of our present system—and they are many and great—and add to it a love of learning for its own sake. But I believe we can lead to an improvement *by degrees*, if we are in earnest about it and are prepared to work for posterity.

Boys are imitative creatures, and are quick to catch the tone of those set over them, provided that the latter are efficient and sympathetic. That is one reason why discipline has improved so markedly in the last few years. The old days of "baiting (or 'ragging') old So-and-so" are nearly gone. The master of to-day is, as a rule, in sympathy with boy-life, and his form can see for themselves that he knows what he is doing. Consequently, his views and characteristics commend themselves for imitation. The more studious and scholarly men, to whom I referred a while ago, were sometimes neither efficient nor sympathetic. Their form-rooms were notoriously bear-gardens, and they were rather afraid of their boys, as creatures they did not understand, and with whom they had little sympathy.

The remedy, I respectfully submit, lies with ourselves. But, like most remedies, it demands some self-denial. If we can show our boys that we ourselves are honestly fond of books, fond of reading, fond of study for its own sake, I believe we shall implant in them the same tastes. I sometimes hope, if we set about it wisely, that we may succeed in doing so without forfeiting that training of the body, that development of manly character, which few of its critics deny to be the fruits of our present system. But our fondness for reading must be genuine and honest. Few are so sharp to detect affected zeal or official eagerness as boys. They know, if anyone does, where our hearts are, and they draw their own conclusions. It is fruitless to lecture in form, however eloquently, on the beauties of English literature, if it is patent that we never dip into it unless obliged.

Here, then, though in a less direct way than the title of the paper suggested, the school library is to be an aid to form-teaching. Form-masters are to draw from it that genuine enthusiasm for good literature which they will be able to pass on to their pupils, and they, in turn, will learn to look on the school library as a place in which they will be certain to find what they have learnt to want.

Again I say, this will take time, and we must be content to sow, and let others reap. But I believe it *can* be done, and I hope it *will* be done. If so, the future generations of English schoolboys will be better educated than they are at present. I believe it can be done without the sacrifice of anything which we now hold valuable, by extending the principle of *selection*. A schoolboy's life is arranged by selection, is it not? You confine him to certain studies, certain games, certain meals which you believe to be best for him. What you want to do in this connexion is, I conceive, to help him to *select for himself* the right kind of reading for his leisure time, and to train him to believe that *some* of his leisure time might well be given up to profitable literature. It is easy to rail at "ephemeral literature": railing never yet converted any boy who was worth conversion. The more excellent way is to lead the boys to think, by showing them that *you* think, humane letters to be more worthy the study of educated Englishmen than cheap magazines. Fortunately, the enterprise of publishers has enabled the antidote to be bought as cheaply as the poison.

Do I seem indefinite and vague? I hope not. I am suggesting two things on our part—a change of attitude and a deeper knowledge; and then I think we shall in time secure what we all desire. What I deprecate is violent change or angry abuse. The man who is for ever decrying athletics and preaching books has little sympathy from me. He is wilfully blind to some of the gravest and most far-reaching facts of school-life. A sudden change on our part, if that were possible, would puzzle the boys, and would not carry them with us. We need rather to realise, and to let them see that we realise, that the pendulum has swung too far in one direction, and that we have lost, to some extent, our sense of proportion. It ought not to be impossible, with the examples of Sir Thomas More and Sir Philip Sidney before us, to train up our boys to believe that an Englishman may be a master of all games and pastimes, and yet have a mind well stored with learning, and taking its true delight in study and reflection.

PICTURES FOR SCHOOL DECORATION.

By E. M. Carter,
Art Master, Whitgift School, Croydon.

THE recent exhibition of German lithographs selected by the Education Committee of the London County Council for distribution among their elementary schools, gives considerable food for thought concerning the place and purpose of pictures in schools, and the decoration of schoolrooms generally. The exhibition in question—which incidentally roused the wrath of the *Times* critic, and drew a letter of protest, on the usual patriotic grounds, from a firm of British fine art publishers—consisted of seventy specimens of coloured lithographs, chosen from among some 300 reproductions of the works of German artists, which Messrs. Asher have recently introduced to this country. Twelve of these lithographs had already been seen in London at the International Exhibition, where they attracted considerable attention—others have been reproduced and favourably reviewed from time to time in the leading art monthlies.

It was a happy thought on the part of the London Education Committee thus to give the public an opportunity of inspecting the drawings collectively under such favourable conditions, and although one might here and there wonder at the choice, in view of the object for which

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they were selected, it must be admitted that the collection was very representative of the series. As regards the "support home industries" aspect of the affair, criticism is at once disarmed by the statement in the catalogue of the exhibition that "The object of the Education Committee in holding this exhibition is to encourage the production of pictures of a distinctly English nature." Suggestions follow for suitable subjects, as, for instance, landscapes characteristic of different parts of England, views of places with historical associations, castles, cathedrals, ruins, and so on. Search among the publishing houses and art supply associations has failed to disclose the existence hitherto of any such, or similar, series, and as the educational value of such works is undoubtedly very great, it is to be hoped that the Council's suggestion may lead to some practical result.

The whole question of the pictorial decoration of schools is one which demands much more consideration than it apparently receives, if one may judge by the stray maps and photographic athletic groups, which so frequently form the sole embellishments of the walls of a secondary school for boys. As to the extent to which pictures should enter into the equipment of school premises, there are, of course, many and diverse opinions, from that of the man who prefers to teach amid surroundings of a barrack-square simplicity—that nothing may tempt the eye to wander—to that of the teacher who covers his walls with a heterogeneous collection of engravings, photographs, lithographs, pressed flowers, and stuffed birds:—"Anything," says he, "is better than ugly bare walls," and accordingly anything that is framed and glazed goes up to break the monotonous surface.

Granting, however, that pictures are to have a place and a legitimate purpose in our schools, the question of the style of picture demands careful consideration. We may divide school pictures roughly into three classes, each of which demands an equally important place in our scheme of decoration:—First, those which are purely decorative, and give pleasure and relief to the eye solely on account of the beauty of composition or scheme of colour. Secondly, reproductions of famous or popular (the two terms are not necessarily synonymous) pictures. These sometimes possess the qualifications of the previous class, but frequently their sole claim for recognition rests on the reputation of the original, the beauties of which, through some cause or other, are often lacking in the reproduction. In the third class we may place pictures which are interesting as bearing directly on the work of the school, such as scenes and episodes in history: battles, portraits, buildings, and architectural details; views of towns and cities; and pictures illustrating geographical and physiographical features, and so forth. If pictures can be obtained which combine the qualities of these three classes, so much the better; but if not, it were as well to bear their special features in mind when the question of their position comes up for consideration.

It would be futile to attempt to lay down laws for the hanging of pictures, as much depends upon the taste and fancy of the hanger, and upon the spaces at his disposal; it may be stated, however, as a broad general principle, that a picture should be hung where it will be both visible and accessible, which observation, though it may savour of triteness, is nevertheless warranted by the often prevailing condition of affairs. How often does one meet with pictures "skied" out of eyeshot, or placed over a projecting cupboard, or behind a door, or fenced in by a barricade of desks? Or, again, in a matter of lighting, placed so as to catch a full reflection of an opposite window, or placed on a strip of wall between two windows? No doubt many of these disabilities are due to the exigencies of building and space, but frequently a moment's thought and trouble will circumvent them, and transform what was merely a wall-ornament into an interesting, and, perhaps inspiring, picture. A picture-rail round the room, seven or eight feet from the ground, simplifies matters very much, and saves much nail-driving and mutilation of the wall.

An environment of beautiful pictures, in harmony with the other surroundings, will doubtless conduce largely to a refinement of taste and a cultivation of artistic perception and discrimination in a child of sympathetic temperament; for the average child, however, something more is necessary. It is not sufficient to cover the walls with reproductions of famous pictures and expect the child to imbibe art culture from the mere contemplation thereof; the pictures will create a transitory interest, but after a time they become commonplace through familiarity, and are accepted simply as a part of the wall decoration. If the picture is to fulfil its functions as an important factor in the educational scheme, it is essential that it should be the subject of frequent reference, either with regard to its æsthetic qualities, or as it may have a bearing on, or in some way illustrate or amplify some subject under discussion. A highly interesting and valuable lesson may be given on the lines so ably and sympathetically indicated by the late T. G. Rooper in his "School and Home Life," in the form of a lecture descriptive of a selected picture, dealing with its subject, composition, treatment, technique, history, or moral interest; together with particulars of the artist, period, contemporary art, and so forth. The subject is capable of infinite expansion.

Or, again, as the pictures in a school doubtless represent several reproductive processes, they might be utilised to illustrate an occasional lecture on the various processes of engraving, lithography, zincography, and the more common of the modern processes of reproduction which have the photograph for their basis. Such a course of lectures would do much to dispel the general haziness which exists in the popular mind, es-

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pecially the juvenile mind, respecting pictorial methods, wherein pictures are classified either as "hand-done" or "printed," generally to the disparagement of the latter, in which class are included etchings (which, by the way, is the popular name for pen and ink drawings and for line drawings generally), original engravings, and lithographs. References of this kind will not only add considerably to the educational value of the pictures, opening up for the children an interest and delight in art which would probably otherwise lie dormant; but will also enable them to extract a greater amount of pleasure from their contemplation in proportion as they understand and appreciate the difficulties and problems to be surmounted by the artist and craftsman in their production.

The German lithographs to which reference has already been made are the outcome of a movement inaugurated some four or five years ago, when 250 men from all parts of Germany, representing many phases of art work, gathered together in Dresden to discuss ways and means of spreading art culture among the people. Synchronising, as it did, with the dawn of the period when artists of all countries were turning their attention to lithography and awakening to a knowledge of its possibilities as a means of expression, it was perhaps inevitable that this movement of art expansion should find its outlet in lithography. The matter was taken up by two of the leading publishing houses of Leipzig: those of B. G. Teubner and R. Voigtländer—which issued from time to time replicas of the works of many leading artists in the form of auto-lithographs—that is, lithographs in which every stone is drawn and coloured, and every printing supervised by the artist. As is always the case when the artist himself uses the tools, the result is more satisfactory than when he gives his design to be executed by some professional craftsman, however skilful he may be. In this case, instead of being a "reproduction," the result is to all intents and purposes an original work, preserving all the freshness and vigour of the actual original drawing.

The collection, including a series by Fischer and Franke, of Düsseldorf, and others from Vienna, now amounts to upwards of three hundred drawings, and ranges through a great variety of subjects. That the whole series should reach the same level of artistic merit was not to be expected, but the inclusion in the list of such works as Wieland's *Matterhorn*, Georgi's *Pflügender Bauer*, Biese's *Hünengrab*, Volkmann's *Frühling*, Jank's *Eiserne Wehr*, and many others by artists of Continental repute, is sufficient guarantee that many of them reach a high standard of excellence. Of the many subjects represented, perhaps the landscapes claim chief place in our consideration, both on account of their individual merit and of their peculiar adaptability to school decoration. In all cases the artist has treated the subject in an eminently decorative style, dealing with the composition in a broad and vigorous manner, and eliminating all obtrusive detail, without, however, sacrificing anything of fidelity to nature. The colour schemes are simple and harmonious, broadly grasped and expressed, and admirably decorative, realising frequently some most striking effect of light and atmosphere, and occasionally rising to a considerable degree of poetical feeling. Apart from their decorative qualities these pictures possess an educational value, inasmuch as they illustrate the topography, architecture, costume, and other features of a foreign country, and may thus serve as subjects for reference during the geography, history, or language lesson.

Two other recommendations we may note in passing are the size and the price. The largest pictures measure about 40″ × 30″, and the prices range from 9*s.* to 2*s.* 6*d.* each. The entire stock may be seen at the offices of Messrs. Asher, of Bedford-street, which firm also issues an illustrated catalogue of the series, which may be had for the asking.

The charming colour prints of Henri Rivière—which have long been obtainable from the Art for Schools Association, and are still unsurpassed for their beauty of conception and delicacy of colouring—may be placed in the same category as the German lithographs as coming under the first head of our previous classification.

With regard to the second of these divisions, the work of Mr. Frederick Hollyer and of the Autotype Company (to mention but two of our well-known firms) is so familiar as to render superfluous any advice as to how and where to obtain pictures of this description. A glance through the galleries or the illustrated catalogues of either of these firms presents an almost bewildering choice of reproductions by the most modern and perfect processes of the works of the masters, past and present. An attempt to do more than generalise upon the merits of the productions of these firms would soon exhaust one's stock of superlatives, suffice to say that as reproductions they are marked by marvellous fidelity to the originals, and that they frequently rise to a high pitch of artistic perfection.

Coming to the third and last of our arbitrary divisions we may find abundant material of this description in the publications of the Art for Schools Association, a society which was formed in 1883 with the object of supplying schools and other institutions with reproductions of well-known works of art at prices within the reach of all classes. Although the Association has done much valuable work in educating and elevating public taste in matters of art, having since its formation sold upwards of sixty-eight thousand pictures, besides circulating many others by means of its loan department, it is to be feared that it has not received that support at the hands of schoolmasters and schoolmistresses which the worthiness of its object and the excellence of its publications demand. The Association is now located at the Passmore Edwards Settlement, where, between the hours of 11 a.m. and 5 p.m.

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the pictures may be seen on the walls of the corridors, and the various rooms of the institution. The pictures are classified under the headings of historical subjects (portraits, &c.); studies of natural objects, everyday scenes and out-of-door subjects; and reproductions of standard works of art. The Society has made arrangements with the publishers whereby they are enabled to sell the pictures to schools at very low rates, in some cases considerably under the market prices; for example, the three magnificent etchings depicting the historic incidents of:—"The Armada sailing from Ferrol" (Sir Oswald Brierly), "The Defeat of the Armada off Gravelines," by the same artist, and "The Armada in Sight" (Seymour Lucas); the published prices of which amount to eight guineas, may be obtained for £2 5s. 6d. on condition that the three are hung together. These pictures measure about 30″ × 20″, and may be seen to great advantage in the large hall of the Settlement. Henri Rivière's woodblock colour prints alluded to above, which are published at 10s., are offered at 8s., or four guineas for the dozen; Constable's "Valley Farm" (22″ × 19″), published at £2 2s., may be had for 11s. 4d.; Landseer's "Monarch of the Glen" (24″ × 23″), published at £1 1s., for 11s. 4d., Millais's "Princes in the Tower" (26″ × 16″) published at £2 2s., for £1 10s. 4d., and so on through the list of upwards of eight hundred works, which contains almost all the names famous in the world of art for the last four or five hundred years. The Art for Schools Association does not advertise, nor does it issue an illustrated catalogue, but the complete set of pictures may be seen at the offices, or a list of the Society's publications, with prices, may be obtained from the secretary, Miss M. L. Cooper, Passmore Edwards Settlement, Tavistock-place, London, W.C.

THE OVERBALANCED CURRICULUM.

A Plea for Individuality in Leisure Hours.[1]

By Arthur Rowntree, B.A.
Headmaster of Bootham School, York.

THE distinguished president of Harvard University tells us that, whilst the debate over the proper selection of studies in youth has been a long and wearisome one, "at last two propositions are seen to command almost universal acceptance. The first is that children and young people should study the elements of a considerable variety of subjects. . . . The second is that training for power of work and service should be the prime object of education throughout life, no matter in what line the trained powers of the individual may be applied."

The few remarks that I have to make on the subject of leisure-hour work in boys' boarding schools assume those two thoughts: (1) variety of subjects is essential; (2) training for power of work and service is essential.

Remembering that there is nothing so dangerous as generalisation, particularly with regard to such things as the delicate operations of mind, let us carve out the school week. To begin with, I treat Sunday as a *dies non*—obviously a false start—and pass to forty hours' class work and preparation; if we eat for twelve hours, play for eighteen, and sleep for fifty-four we have spent 124 hours out of an available total of 144. May I claim the remaining twenty for leisure-hour pursuits?

If we neglect these we are forgetting our initial thought, "training for power of work and service"; we are stamping our *imprimatur* on wastage. And surely, if the word school once meant leisure, we are not guilty of much violence in asking that school shall still include leisure. Until these hours are satisfactorily dealt with the balanced curriculum that we are agreeing upon is unstable; it is overbalanced, and overbalanced largely by the weight of athleticism in one scale and the consequent lack of ideas in the other. I am not entering on a cheap tirade against athletics; she has her own place and scope, a part to play that nothing else can. But if a poet can bid knowledge know her place, we can bid athletics know her place too.

One of those much praised and much decried stories of schoolboy life shows that number five study had a higher conception of life than the master who expected all his house to attend all the matches and yell "Well hit, sir!" standing on one leg and grinning all the afternoon. And it is notable that this biographer of Stalky and Co. designates Little Hartopp as the man who "believed in boys and knew something about them"—the only master who understood leisure-hour pursuits.

We want no wasted time in schools. President Eliot pleads for the "habit of quick and concentrated attention." The problem is, he says, to discover the means of interesting the child "in mental occupation enough to induce him to concentrate his attention. Skill in discovering the means of interesting the childish mind enough to compel attention is characteristic of the good teacher. If oral instruction does not gain a close attention, perhaps books will; if books fail, carpenter's tools, cook's tools, a lathe, an embroidery frame, or a forge may succeed; if mechanical work does not rouse the mental forces, perhaps drawing or modelling will; if all other means fail, the training of the power of attention may be begun through music."

In ways of this kind the net must be spread wide for the schoolboy. The rooms should be so arranged that there is space for a library, for voluntary nature study, for carpentry; and the hours so arranged that it is worth while to settle down to some of these employments. Let thorns and briars obstruct the path of the loafer.

The library must be good. With a little care and tact much can be done. I found last autumn

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

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term that a large amount of voluntary reading had been done by one class. The reading covered a wide area; a large number had read some poetry, including many of Shakespeare's plays, some Browning, some Matthew Arnold, and two had read "Paradise Lost." Two read "Rasselas," one Carlyle's "Heroes," and one "The Origin of Species." Partly in connection with this reading, the Essay Society and Debating Club were meeting in alternate weeks.

At the same time the Natural History Club with its fortnightly meetings was run with vigour by a committee of boys advised by a master who had sympathy, tact, and knowledge, a keen naturalist himself. The school organisation makes it easy for these boys to have long stretches of time in the neighbouring hunting grounds: plants, butterflies, shells, have their devotees. Some of the school public functions have their centre in this work; a Christmas exhibition and prize distribution are useful auxiliaries.

I am speaking from the cumulative experience of seventy years during which these pursuits have been followed. Some of my colleagues have arranged an exhibition of leisure-hour work a couple of hundred yards beyond the reception room of the British Association.

Some collections are shown there, and our experience is that the physical activities involved in collections prove how invaluable they are. I am aware of the dangers of collections, and heard last week of a small boy (not connected with this school) who had imbibed the thought that a collection was a necessity, and took for his melancholy mania the collecting of beer-bottle labels!

The best records of efficient work that we can secure are found in special studies or in diaries. One boy has prepared a dozen cases illustrating the colours of insects; he shows the common and silver-studded blues on rushes, the buff tips on rotten sticks; and another case shows small tortoiseshell chrysalids affected in colour by the papers to which they are attached. Another boy has made a careful study of shells. His work takes him to all the neighbouring ponds; he brings his spoils home, and his note-books show study of structures with descriptions and drawings of a high order. And not the least part of his success is the help that he has given to younger boys; his has been a training for power of work and service.

A third boy exhibits fifteen volumes on ecclesiastical architecture, compiled in two years and a half. He has rubbings of brasses and careful drawings; he has made a comparison of three centuries of archiepiscopal vestments from representative tombs.

The exhibition includes books written by Old Boys on subjects which have been their school hobbies; also photographs of birds' nests and eggs taken by a couple of brothers in the scant leisure that business gave them soon after leaving school.

The necessary environment for this work includes sympathy and tradition, fostered by parents, the school, and Old Boys. The Old Scholars' Association has done good service in offering an annual prize for research work.

All this work is voluntary in so far as the word can be applied where the pressure of public opinion is all on the side of the work. So that patience is fostered, acquisitiveness is fostered, industry is fostered; and these are accompanied by pleasurable emotions in part due to the interest of the work, in part to its voluntary nature—the boy is acting on his own initiative. The whole system helps to solve the problem of the "duffers," mental and moral. It is a wastage for the nation that the dull boys shall be rusticated as intellectually unfit or herded together as mental lepers. I have in mind a boy who made little headway in the schoolroom and less in the playing-field; but he became a respected member of the school through his pre-eminence as a carpenter; his skill taught self-respect, and he was universally respected.

Again, I have repeatedly seen a boy who was wasting his substance in riotous line-writing suddenly captured by a hobby, and experiencing at once true conversion of the schoolboy heart; it is a veritable return of the Prodigal Son. But it is not chiefly on behalf of a minority of weaklings, mental or moral, that I plead for full opportunities for the leisure hours. It is on behalf of the corporate life of the school, and the life of every individual in the school. I should like to see an Order of Merit instituted. Would it not be possible for some university entrance scholarships to be granted as school-leaving scholarships, so that a premium might be placed on the all-roundness engendered by leisure-hour pursuits?

They give a thought-stimulus to the school. President Eliot says, if I may quote him once more: "The problem education for efficiency has to solve is how to stimulate young people to think in the absence of the pressing motives of the real world. Since consecutive thinking absolutely requires personal initiative, or a compulsion from within and not from without, there must be a motive for this compelling action of the will. One available motive is supplied by experience of the enjoyment or satisfaction which good thinking yields to the thinker; but this motive can be roused to activity in the study of those subjects only which have a natural interest for the young thinker."

The uniformity of school life—interminable class-work, cricket and cricket jargon; or form-work, football and football slang—is deadening; this encourages the "vapid, dull, and stupid boys" who were in the newspaper columns a few months ago. The right culture of leisure hour pursuits tends to wide-awakeness, expands the circle of thought, helps to make the full mind which leaves little room for ignoble thoughts, and makes for that sturdy independence of thought combined with high endeavours which build the hopes of the future. A boy who has learned to spend his leisure hours wisely is ready to serve his day and generation.

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MATRICULATION AT THE ENGLISH UNIVERSITIES.

By Fred Charles, B.A.
Strand School, London.

THE English universities, with slight exception, grant to the holders of various certificates exemption from all or part of their own entrance examinations, and an attempt is here made to summarise these mutual concessions.

Oxford will accept as an equivalent to the "examination in stated subjects" at Responsions a certificate of having passed Parts I. and II. of the Previous at Cambridge; and Cambridge regards Responsions as exempting from Part I. of the Previous. Both universities accept, under certain conditions, the certificates of the Oxford and Cambridge Schools Examination Board. Thus, at Oxford, if the holder has passed in Latin, Greek, and mathematics at the same examination, he is exempt from the examination in stated subjects; while Cambridge regards a pass in Latin and Greek as exempting from the classical papers, and Scripture (if including Greek Gospel) from the paper on the Greek Gospel.

The Senior University Local examinations also serve for all or part of Responsions and of the Previous. Oxford specifies that the holder of a certificate who has shown sufficient merit in the Oxford Senior Local examination is to be excused from Responsions, and grants the same concession to the holder of the Cambridge Senior Local certificates, provided: (1) that the holder has shown sufficient merit in Latin and in Greek to be qualified in these subjects for exemption from Part I. of the Previous; (2) that the certificate includes arithmetic and either algebra or geometry; (3) that the holder is certified by the Delegates of Local examinations to have shown sufficient merit in Latin prose. Cambridge grants exemption from the classical papers and the paper on the Gospel to those who have satisfied the examiners in those subjects at the Senior Local examinations of either university, provided that the Scripture included the Greek Gospel.

Both Oxford and Cambridge Universities will accept a certificate from the Principal or one of the Registrars of the University of London that the holder has passed at that university either the Matriculation or the School Examination (Matriculation standard) for the School-leaving certificate, if it includes Latin and Greek. Oxford requires further that the holder has passed in elementary mathematics, and that he has satisfied the examiners in an additional paper in Latin prose composition, or that he has satisfied the masters of the schools in Latin prose composition. Cambridge excepts from this exemption the paper in Greek Gospel or its substitute.

A certificate from the Registrar of the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, that the holder has passed the Matriculation examination of that Board is accepted by Oxford University provided that it includes Latin, Greek, and elementary mathematics, and that he has satisfied in Latin prose composition either the examiners or the masters of the school. The same certificate is accepted by Cambridge University provided it includes Latin and Greek, but this university excepts the paper in Greek Gospel and also the paper in Latin unprepared translation unless that was taken as the alternative to the set books in Latin.

A candidate in the Leaving Certificate examination of the Scotch Education Board who has passed at the same examination in the Higher Grade, both in Latin and Greek, is excused Responsions at Oxford if he has also passed in mathematics in the lower standard, and at Cambridge he is excused the Previous, except the paper on the Greek Gospel or its substitute.

No mention has yet been made of exemptions from the examination in an additional subject at Responsions and from Part II. of the Previous. Oxford accepts:—

(1) A Higher Certificate of the Oxford and Cambridge Schools Examination Board, showing that the holder has passed in French or German, or with distinction in Greek or Latin;

(2) A certificate from the Scotch Education Department that the candidate has passed in the Honours Grade in Greek, Latin, French, or German;

(3) A certificate stating that the holder has shown sufficient merit in French, German, or Italian, in the Oxford Senior Local examination;

(4) A certificate of having passed the Cambridge Senior Local examination, provided that the holder has shown sufficient merit to be entitled to exemption from the additional subjects of the Previous, Part II.

The corresponding exemptions at Cambridge cannot be specified so easily, the conditions being much more complicated. The Higher Certificate of the Schools Examination Board and the Senior and Higher Local examinations will exempt from mathematics, English essay, Scripture, and the additional subjects, provided the candidate passed in those subjects. The certificate of the Scotch Education Department, London Matriculation, and the Joint Matriculation of Manchester, Liverpool, Leeds, and Sheffield procure exemption for their holders from Part II., except in Paley's "Evidences," and from the additional subject.

London University grants exemption from the Matriculation examination to graduates of Oxford and Cambridge; to those who have passed all examinations for a degree in those universities; to women who have obtained Tripos certificates granted by Cambridge, and to women who have passed the Second Public Examination of Oxford; to students who hold the Scotch School-leaving Certificate, having passed on one and the same occasion, in the Higher or Honours

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Grade, in all the subjects required by the Matriculation regulations; and to students who have passed Parts I. and II. of the Cambridge Previous, provided that the two parts are taken at the same time, and provided that either logic has been taken in Part II., or, if the candidate has taken Paley's "Evidences" instead of logic, he has also passed in one of the additional subjects.

The Oxford Senior Local and the Cambridge Senior Local certificates will procure exemption from London Matriculation if, at one and the same examination, a student has passed in (1) English language and literature, including the English essay, or history together with the English essay, or geography with the English essay; (2) arithmetic, geometry, and algebra; and (3) *three* of the following subjects or combinations of subjects not counted under (1):—Latin, Greek, French, German, Spanish, Italian, Greek or Roman history, English history, foreign history, *two* subjects in mathematics other than those previously mentioned, chemistry, mechanics, heat, sound and light, electricity and magnetism, botany, zoology; provided that either Latin or mechanics, or heat, sound and light, or chemistry, or botany, is included, and that one language is included.

The Higher Certificate of the Oxford and Cambridge Schools Examination Board and the Senior Grade Certificate of the Intermediate Education Board for Ireland will give exemption under similar conditions, *i.e.*, conditions which secure that the subjects required by the regulations for the London Matriculation shall have been taken.

A student is entitled to exemption from the Matriculation examination of the Universities of Manchester, Liverpool, Leeds, and Sheffield, provided he has satisfied any one of the five following conditions:—

(i) Has passed Responsions, including both geometry and algebra, and one additional subject.

(ii) Has passed Parts I. and II. of the Previous, and also in one of the additional subjects of that examination.

(iii) Has gained a Higher Certificate or certificates of the Oxford and Cambridge Schools Examination Board, including (*a*) one foreign language; (*b*) either English or English essay, in either case with English essay; (*c*) elementary mathematics, together with algebra and geometry, as required for passing in additional mathematics; (*d*) *two* other subjects (of which Scripture knowledge shall not be one), which may include the alternative subject not taken under (*b*), and additional mathematics.

(iv) Has obtained an Oxford Senior Local certificate, provided that the candidate has passed at one and the same examination in (1) English language and literature, including composition; (2) arithmetic, geometry and algebra; and (3) either history or geography, and *two* of the following sections, one at least being a language, namely, (4) Latin, (5) Greek, (6) French, (7) German, (8) Italian, (9) Spanish, (10) one subject in higher mathematics, (11) chemistry, (12) one subject in physics.

(v) Has obtained a Cambridge Senior Local certificate, with the same provision as in (iv).

OBJECT-LESSONS.

II.[1]

By O. H. LATTER, M.A.
Charterhouse.

THE problem that presents itself to everyone engaged in teaching large classes is to secure that every member of the class shall receive the mental training and stimulus aimed at in each lesson. In dealing with object-lessons it is most desirable that every child shall have exactly the same opportunities and shall be compelled by the manner in which the lesson is given to use and cultivate his own powers of observation and reasoning at each step. With this object in view, it is best that the teacher shall beforehand draw up a definite list of questions relating to the object in hand, and so framed that, step by step, the facts shall be ascertained, and then easy conclusions deduced. These questions may be written upon the blackboard a few at a time, or separate slips may be copied and handed round to each member of the class. The answers can then be written down by each pupil, the whole then discussed by the teacher, and many of the same questions repeated *viva voce*, and marks perhaps assigned for their oral work. The written results can subsequently be corrected by the teacher and returned with comments at the beginning of the following lesson. The greater proportion of marks should certainly be allotted to the written work and drawings. Great importance should be attached to the composition of the answers; children are very apt when writing an answer to a printed question to reply, as though *viva voce*, in a single word or an incomplete sentence. The teacher should insist upon every answer being a complete sentence, perfectly intelligible to anyone reading it even in ignorance of the exact form taken by the question. Failure to enforce this not only misses a great opportunity, but leads to habits of slovenly thought and still more slovenly writing.

It will often be the case that in a long series of questions directed to some one object the later depend more or less upon the correct solution of the earlier. For this reason it is desirable to break the lesson into sections, and to make sure that the "lame-ducks" of the class do not lag hopelessly in the rear or flounder in a sea of inaccurate preliminary observations. In any large class there are sure to be some who will fail to see the bearing and meaning of the plainest question, and unless such weaklings receive early help they get thoroughly discouraged, and, in-

[1] The first article appeared in the August number.

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stead of gaining in self-reliance, suffer the opposite experience, and are the worse rather than the better for the lesson. In thus speaking I have in my mind those pupils of slowly-moving intellect who really are hardly fit for class teaching, but are perfectly well able to grasp all the facts and general principles, provided that individual personal attention is bestowed. An alert teacher will quickly detect these members of his class, and it should henceforth be his business to move about the class-room while the pupils are writing their answers, and to make sure, *by subsidiary questions and by no other means*, that these congenital laggards are making due headway.

Let us now proceed to repeat the lesson already sketched in the previous article, but in such a manner as to tell the pupil nothing that he ought to be able to find out by the aid of his own eyes and intelligence. It goes without saying that specimens should be provided in sufficient number to ensure that each child can personally examine one of each kind. In some cases it will be necessary to provide one example for each child; in others it may be possible to allow two or three children to share a specimen between them.

Starting, then, with a general survey of the whole series, the following questions might be asked:- "What do you notice about the thickness and strength of the stems and branches of all these climbing plants in relation to the total size of the plant? Look, next time you are out walking, for an ivy plant which has not found anything up which to climb, and tell me next lesson about the way in which it has grown. You might also in the course of the summer try the effect of growing a scarlet-runner plant in a pot, and giving it no pole to climb. How do all non-climbing plants, even such opposites as an oak-tree and a daisy, dispose their leaves with regard to the light? What position do the leaves of geraniums and other plants grown in a window take up? Recall what we found out in a previous lesson about plants grown in darkness or in a bad light. Now say what advantage these plants obtain by their habit of climbing."

Thus much will suffice for introduction; and here a pause might be made for discussion, and to make sure that all have grasped the fact that climbing plants possess but weak and relatively slender stems, incapable without assistance of sustaining the weight of the leaves, and, further, that light is necessary for the health of green plants, and that the general disposition of the plant members is such as to secure good exposure of the leaves. The teacher may then prepare the way for the next batch of questions by stating the fact that different plants use different members for the purpose of attachment, and may tell the class that he wishes them to find out what part of the plant it is that becomes a climbing organ in each case. Some such introduction is legitimate and indeed necessary, in order to direct the attention to the salient points and to give purpose to the inquiry in hand.

Proceeding then to the ivy, "What colour are the things by which the ivy lays hold of its support? On what part of the plant and which side do they grow? Do they, with regard to position, bear any constant relation to the leaves and branches? What portions of other plants that we have examined were of the same colour as these climbing organs, and behaved in the same way towards light? What part of the plant do you, then, conclude that these climbing organs are? Try when you are out if you can find any similar things upon the ivy plant which has failed to find anything up which to climb."

Here again, there should be a pause for revision, and the children may be told to see if the ivy plant that is trailing over the ground confirms or weakens their conclusion that this plant uses (aerial) roots for laying hold of walls, trees, &c. "Now consider the hop, honeysuckle, scarlet-runner, and convolvulus together. By what means do these four all climb? Imagine yourself to be walking up the spiral staircase described by the plants—towards which hand, right or left, would you constantly keep turning in your ascent of each plant? If the growing-point of any climbing plant always grew towards the sun, and (in the northern hemisphere) followed the sun in his daily path across the sky, what sort of spiral would be described, one turning to the right hand or to the left? Is this the case in any of the four plants under examination, and, if so, in which? What conclusion do you now arrive at with regard to the cause of the spiral described by these plants? When you are out in the country try to find other plants which climb in the same manner as these four, and notice which kind of spiral they describe. Also, by means of a stick pushed into the ground, mark the exact position of the growing-point of a scarlet-runner plant in the early morning; visit the plant again several times at intervals of a couple of hours or so during the day, and again early next morning at the same time as on the previous day; on each occasion mark accurately the position of the growing-point, and then state (*a*) in which direction the point moves, (*b*) how much (through what number of degrees) it moves in the course of the twenty-four hours; (*c*) at what period the movement is most rapid, and when most slow; (*d*) if the movement is in the same or in the opposite direction to that in which the sun appears to move."

It would be tedious to pursue to the end the whole of the lesson previously sketched. I trust that I have said enough to show what I believe to be the only useful way of conducting object-lessons, viz., by appropriate questions to guide the pupil to find out as much as may reasonably be expected about any given object, and to bring home to him the consciousness that even the most common objects in nature contain rich stores of interest, and that it is in his own power to unlock the door of the treasure-house with the key that has been in his possession so long as he has been aware of his own existence.

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But it must not be supposed that I am maintaining that an object-lesson delivered upon the lines here advocated, and lasting, perhaps, one hour at the longest, could by any possibility embrace within its limits the whole or anything like the whole of the matter with which I dealt in my former article. On the contrary, at least three or four lessons would be required. It may, perhaps, be advanced in objection that the method is therefore very slow, and the amount of knowledge gained in a given time very slight. Granted. And to such criticism I would reply that the amount learnt matters not one jot; the manner of learning—that is what matters, and matters most of all at that early period of life for which, as I have already said, object-lessons are intended. Such knowledge as is gained by the process here recommended is acquired not at all upon authority nor by rote, but solely as the result of individual endeavour to learn direct from nature herself. For each child the work is a piece of original research, and though the facts ascertained are to be found in every text-book, yet for the child it is fresh knowledge gained in the same kind of way as we may hope that in later life he will gain knowledge that is as yet in no book save the unopened pages of Nature. At first he must be guided and taught what questions are to be put, in order that afterwards he may know how to formulate his own inquiries, and how to devise his own experiments, his own acts of interrogation. And, as I have already insisted, we have abundant reason and sanction for travelling slowly, step by step, over the first part of the evolutionary course.

It will, perhaps, have been noticed that in each portion of the above lesson at least one question deals with matters that are necessarily outside the limits of the class-room. This is done with deliberation, for there is no doubt a tendency among some children to keep school work and the affairs of everyday life in separate mental compartments; and even if they fail to succeed in keeping games and less formal recreations from their thoughts during school hours, yet they are eminently skilful in performing the reverse process. By setting some one or two simple and easy things connected with the lesson to be ascertained out of doors, a good deal may be done to break down that undesirable dividing partition between school and not-school, and to get rid of that intellectual extinguisher, the word "shop." Such out-of-door exercises do more than anything I know to foster the habit of truly seeing what passes before the eyes, and of learning at all times, whether within the four walls of the class-room or amid any of the thousand-and-one different circumstances in which our pupils may find themselves in after life. Nor will it be entirely out of place to remind the science teachers of object-lessons that it is the general, and not the special, educational effect that must be borne in mind. Few are destined to make any actual use of the knowledge obtained from a course of object-lessons, but all are capable of being so trained in habits as to approach their work in life, be that what it may, in a scientific spirit, ready and desirous to learn, and determined to let no fact escape them. It is for this that object-lessons and more systematic courses of science have been introduced into school curricula.

SPELLING REFORM.

By JOHN BYGOTT,
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ONE could imagine being told that the Mailed Fist of Germany had said, "Let there be reformed spelling," and there *was* reformed spelling; but it is a little more difficult to take President Roosevelt's announcement seriously. In certain quarters it seems to have fallen like a bolt from the blue, but rational reflection will show us that it is neither so momentous nor so radical as some sections of the Press would have us believe.

In the first place, what is it? Merely a direction that in future Government publications of the United States three hundred selected words be spelled as set forth in the list at the foot of this article. President Roosevelt's order is embodied in a letter to the official printer, in which he says: "There is not the slightest intention to do anything revolutionary or initiate any far-reaching policy. The purpose simply is for the Government, instead of lagging behind popular sentiment, to advance abreast of it. . . . If the slight changes . . . meet with popular approval, then the changes will become permanent without any reference to what public officials or individual private citizens may feel; if they do not, they will be dropt, and that is all there is about it."

Thus, it will be seen that no new system of phonetics is proposed, no remodelling of the language, no simplified English which should outrival Esperanto, no linguistic shorthand couched in those mysterious hieroglyphics so dear to the spelling reformer of old. A glance through the list will reveal many forms familiar to those accustomed to American books and papers. For some years we have seen *u* dropped by Americans in the ending *-our*, and even ourselves sometimes write *honor, color*, &c., though we may not countenance such spelling "in school." In letter writing and private notes, who is not often tempted to pen *altho', program?* and who is there who would take exception to *z* in such words as *catechize, legalize*, or *naturalize*, though we may prefer the *s*? Many of the spellings can hardly be termed reformations; we notice *assize, coeval, deposit, era, judgment, phenomenon*, to name a few which are by no means strangers on this side of the Atlantic. Perhaps what would jar most upon the orthographic nerves of some people is the substitution of *-t* for *-ed* in verbal forms such as *kissed, wrapped*, &c.

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If we take a backward glance, we recollect that Anglo-Saxon has given us the past tense ending, which was originally *-de* or *-te*, and which can be traced still further back to the Gothic *-da* or *-ta*. The ever-flowing stream of time has swept away most of our inflectional endings, and it really would seem a barbarism to sacrifice the few remaining. From the first, the *t* of the past participle was distinct from the past tense, but the loss of final *-e* in *-de* or *-te* has long rendered them indistinguishable in form. One change which ought to be welcomed by the philologically wise is *rime* for *rhyme*. Who can deny that the former is more akin to the Anglo-Saxon *rim*? and it really does seem an anomaly that so many people should adopt the spelling *rhyme*, which has arisen through a wrongly-supposed connection with the Greek ῥυθμός. The spelling *wo*, *woful* is merely taking a backward leap to the good old days of Chaucer, who, in the Knight's Tale, tells us that—

> Ful ofte a-day han thise Thebanes two
> Togidre y-met, and wroght his felawe *wo*,

and in the earlier folios of Shakespeare do we not see *dolor*?—

> But, for all this, thou shalt have as many *dolors* for thy daughters as thou canst tell in a year.—*Lear*, II., iv., 54.

So much, then, for the changes, and now a few words as to their application and extension. We are told that in the States the adherents of the Roosevelt spelling are daily increasing in numbers, and it has just been announced that more than 800 American college professors have signed an agreement to use the famous 300 words. Moreover, the Civil Service Board in Washington has decided that in examinations for Government posts the new method may be used, though the old still remains optional.

Will the new spelling be far-reaching in its effects? I question whether it will. As previously pointed out, many of the renderings have for some time prevailed in American publications, and no doubt the president's dictum will hold in the case of State documents, as well as in commercial correspondence and the more ephemeral type of journalism. From a distinctly literary standpoint we think it will be long before such changes make headway, if, indeed, they ever do. This seems particularly the case with the reissue of standard works. In a contemporary novel we may pass *plow* and *center* with scarce a shudder, but Shakespeare and Milton in a new guise—semi-phonetic, with ghost-like touches of Chaucerian forms! The thought is too uncanny; Bowdlerisms are bad enough, but Theodorites seem worse.

Before any spelling reform can make progress, there must be some agreement as to its general principles, and the only really satisfactory way to do this seems to be to appoint a commission of philologists and literary men to lay down principles and to suggest initial reforms. What Mr. Roosevelt has done is intrinsically unimportant, but its moral effect is great: it is the first sheep which may lead the ninety and nine to follow. Had the president been less decisive, and had he proposed a conference of British and American authorities to decide reasonable changes, he would have earned the gratitude, instead of the criticism, of two hemispheres. He has given the movement a great advertisement, but we question whether he has really done more than furnish clubs, afternoon tea-tables, and other places within the meaning of the Act with a somewhat novel and exciting subject of conversation. The picture is not without a humorous side, for lawyers have discovered that the order violates a law of Congress, passed twenty-five years ago, making Webster's Dictionary the legal standard of Government spelling in the United States. Perhaps spelling-books were scarcer and competitive examinations less strict then!

Agreed, then, that a guarded spelling reform would be useful and in some cases advisable, it is obvious that it cannot be brought about by one man, and that, if done, it must be done on scientific lines. That is to say, due regard must be paid to the history and construction of the language in general and of words in particular, and nothing done which shall rob our speech and our literature of those romantic touches of historic interest which appeal so strongly to the student of English.

I am asked whether teaching of reformed spelling is desirable or possible in schools, and must answer (my own opinion, mind you), "No! I think not, from the standpoint of real education." And why? Merely because I hold that, as concrete teaching is always superior to abstract theories, the best and truest way of teaching English is to bring your learner into intimate contact with all that is noblest in the literature of his mother tongue. Could this be successfully done, if the sleuth-hound of reformed spelling were let loose upon our great poets, our kings of the novel and the essay? To my mind the answer is obvious, and it is not an affirmative one.

Like Pilate, President Roosevelt has spoken, but, for all that, I am afraid the majority of us will continue to spell words as they are written in our great classics, as they are set forth in our dictionaries. The famous "three hundred" is only a momentary wonder, and, despite its appearance, the stars will continue to shine as they shone upon Chaucer and Shakespeare, the sun will still rise in the east and set in the west, and the forces of Nature will remain unabated. The president can scarcely use the words of old Ovid to describe himself and his list—

> Nos duo turba sumus.

We give below the three hundred words, the spelling of which President Roosevelt has agreed stands in need of amendment. The present form of spelling the words is given side by side with the new.

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NEW FORM	PRESENT FORM.
abridgment	abridgement
accouter	accoutre
accurst	accursed
acknowledgment	acknowledgement
addrest	addressed
adz	adze
affixt	affixed
altho	although
anapest	anapaest
anemia	anaemia
anesthesia	anaesthesia
anesthetic	anaesthetic
antipyrin	antipyrine
antitoxin	antitoxine
apothem	apothegm
apprize	apprise
arbor	arbour
archeology	archaeology
ardor	ardour
armor	armour
artizan	artisan
assize	assise
ax	axe
bans	banns
bark	barque
behavior	behaviour
blest	blessed
blusht	blushed
brazen	brasen
brazier	brasier
bun	bunn
bur	burr
caliber	calibre
caliper	calliper
candor	candour
carest	caressed
catalog	catalogue
catechize	catechise
center	centre
chapt	chapped
check	cheque
checker	chequer
chimera	chimaera
civilize	civilise
clamor	clamour
clangor	clangour
clapt	clapped
claspt	clasped
clipt	clipped
clue	clew
coeval	coaeval
color	colour
colter	coulter
commixt	commixed
comprest	compressed
comprize	comprise
confest	confessed
controller	comptroller
coquet	coquette
criticize	criticise
cropt	cropped
crost	crossed
crusht	crushed
cue	queue
curst	cursed
cutlas	cutlass
cyclopedia	cyclopaedia
dactyl	dactyle
dasht	dashed
decalog	decalogue
defense	defence
demagog	demagogue
demeanor	demeanour
deposit	deposite
deprest	depressed
develop	develope
dieresis	diaeresis
dike	dyke
dipt	dipped
discust	discussed
dispatch	despatch
distil	distill
distrest	distressed
dolor	dolour
domicil	domicile
draft	draught
dram	drachm
drest	dressed
dript	dripped
droopt	drooped
dropt	dropped
dulness	dullness
ecumenical	oecumenical
edile	aedile
egis	aegis
enamor	enamour
encyclopedia	encyclopaedia
endeavor	endeavour
envelop	envelope
Eolian	Aeolian
eon	aeon
epaulet	epaulette
eponym	eponyme

NEW FORM.	PRESENT FORM.
era	aera
esophagus	oesophagus
esthetic	aesthetic
esthetics	aesthetics
estivate	aestivate
ether	aether
etiology	aetiology
exorcize	exorcise
exprest	expressed
fagot	faggot
fantasm	phantasm
fantasy	phantasy
fantom	phantom
favor	favour
favorite	favourite
fervor	fervour
fiber	fibre
fixt	fixed
flavor	flavour
fulfil	fulfill
fulness	fullness
gage	gauge
gazel	gazelle
gelatin	gelatine
gild	guild
gipsy	gypsy
gloze	glose
glycerin	glycerine
good-by	good-bye
gram	gramme
gript	gripped
harbor	harbour
harken	hearken
heapt	heaped
hematin	haematin
hiccup	hiccough
hock	hough
homeopathy	homoeopathy
homonym	homonyme
honor	honour
humor	humour
husht	hushed
hypotenuse	hypothenuse
idolize	idolise
imprest	impressed
instil	instill
jail	gaol
judgment	judgement
kist	kissed
labor	labour
lacrimal	lachrymal
lapt	lapped
lasht	lashed
leapt	leaped
legalize	legalise
license	licence
licorice	liquorice
liter	litre
lodgment	lodgement
lookt	looked
lopt	lopped
luster	lustre
mama	mamma
maneuver	manœuvre
materialize	materialise
meager	meagre
medieval	mediaeval
meter	metre
mist	missed
miter	mitre
mixt	mixed
mold	mould
molder	moulder
molding	moulding
moldy	mouldy
molt	moult
mullen	mullein
naturalize	naturalise
neighbor	neighbour
niter	nitre
nipt	nipped
ocher	ochre
odor	odour
offense	offence
omelet	omelette
opprest	oppressed
orthopedic	orthopaedic
paleography	palaeography
paleolithic	palaeolithic
paleontology	palaeontology
paleozoic	palaeozoic
parafin	paraffin
parlor	parlour
partizan	partisan
past	passed
patronize	patronise
pedagog	pedagogue
pedobaptist	paedobaptist
phenix	phoenix
phenomenon	phaenomenon
pigmy	pygmy
plow	plough
polyp	polype

NEW FORM.	PRESENT FORM.
possest	possessed
practise	practice
prefixt	prefixed
prenomen	praenomen
prest	pressed
pretense	pretence
preterit	preterite
pretermit	praetermit
primeval	primaeval
profest	professed
program	programme
prolog	prologue
propt	propped
pur	purr
quartet	quartette
questor	quaestor
quintet	quintette
rancor	rancour
rapt	rapped
raze	rase
recognize	recognise
reconnoiter	reconnoitre
rigor	rigour
rime	rhyme
ript	ripped
rumor	rumour
saber	sabre
saltpeter	saltpetre
savior	saviour
savor	savour
scepter	sceptre
septet	septette
sepulcher	sepulchre
sextet	sextette
silvan	sylvan
simitar	cimeter, scimitar,
sipt	sipped [&c.
skilful	skillful
sithe	scythe
skipt	skipped
slipt	slipped
smolder	smoulder
snapt	snapped
somber	sombre
specter	spectre
splendor	splendour
stedfast	steadfast

NEW FORM.	PRESENT FORM.
stept	stepped
stopt	stopped
strest	stressed
stript	stripped
subpena	subpoena
succor	succour
suffixt	suffixed
sulfate	sulphate
sulfur	sulphur
sumac	sumach
supprest	suppressed
surprize	surprise
synonym	synonyme
tabor	tabour
tapt	tapped
teazel	teasel
tenor	tenour
theater	theatre
tho	though
thoro	thorough
thoroly	thoroughly
thru	through
thruout	throughout
tipt	tipped
topt	topped
tost	tossed
transgrest	transgressed
trapt	trapped
tript	tripped
tumor	tumour
valor	valour
vapor	vapour
vext	vexed
vigor	vigour
vizor	visor
wagon	waggon
washt	washed
whipt	whipped
whisky	whiskey
wilful	willful
winkt	winked
wisht	wished
wo	woe
woful	woeful
woolen	woollen
wrapt	wrapped

PHYSICAL TRAINING IN SWEDEN.

By ALINE ROTHERA,
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ADVOCATES of physical training and teachers of gymnastics in England have long been trying to formulate a system at once the best for physical development and the most suitable for use in our schools.

The stress of modern civilisation has brought in its train several ill effects, and people have begun to realise that steps must be taken to cope with the mental wear and tear of present-day life. This feeling, widespread as it is, has perhaps been most strongly marked in girls' schools, where increased mental work and altered physical conditions have shown most clearly the need for better equipped bodies with which to withstand the strain thus produced, and it has been thought that gymnastics, together with better hygienic conditions of living, may be of great value to this end. While it is recognised that a specially devised scheme of physical training must accompany the thorough and systematised intellectual course provided for children, both boys and girls, during their school life, no one system holds complete sway in England, and the difficulty is to decide which among them is best and most suitable to supply the needs of modern civilisation.

Being an enthusiastic advocate of the Swedish system, and having for many years had practical experience of its beneficial results, first as a student, then as a teacher, I determined in

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the spring of this year to see how it was carried on in its mother country; accordingly I visited Sweden and Denmark, where, by the kindness of Prof. Töngren, headmaster of the Central Institute, Stockholm, and Inspector Knudsen, Gymnastik direcktoren, Copenhagen, I was enabled to inspect thoroughly while at work several schools of varying type. Among these were the Norra Latin Läroverket, a large secondary school of 750 boys; the Athenaum, a similar one for girls; the Katarina Skola, a large primary school; and also the work done by the men and women students in the Central Institute for the training of gymnastic teachers. The Central Institute is the source of the gymnastic life of Sweden, and from it flows, year by year, a steady supply of trained teachers. Consequently the whole country is brougbt up on one system — a system of gradualgrowth, based on sound physiological and psychological reasons, so thoroughly and systematically thought out that for supplying the bodily needs of individuals and communities it appears to stand alone and to have no equal.

The first thing that strikes the visitor on starting such a tour of inspection in Stockholm is the extraordinarily beautiful gymnasia provided by the State for the schools. Each gymnasium is, as a rule, a large, airy room placed in a prominent position in the school, and possessing, for the most part, a roomy balcony, from which point of vantage the visitor is enabled to watch the work done by the various classes. On entering the gymnasium of the Norra Latin Läroverket a large open floor space is seen, four mid-corner pillars, broad and massive, each having its base padded with leather, and surmounted by a "crow's nest," reached by a vertical ladder. Round the walls are seen rows of "ribstalls," while, fastened to pulleys, either at the walls or on the ceiling, are rope ladders, vertical ladders, and ropes of various kinds. At the far end is a horizontal ladder, and behind that a series of vertical poles, "well fitted up at any rate"!

Fig. 1.—A Class of School Children in a Swedish Gymnasium: showing the Children teaching each other.

But this is not all. In the middle of a class I was watching, a class of 175 well-set-up, jolly lads, suddenly a command came from the teacher, Major Selöw, and, as if by magic, apparatus hitherto hidden from sight appeared in view. Trap-doors opened in the floor, and "double-booms," uprights and all (eight sets), sprang into being; "saddles" appeared and were fitted on to the booms; parallel bars (four sets), as it were, jumped up from hidden regions; four oblique ropes descended from the crows' nests, and were made fast to a central hook which had mysteriously appeared on the ground; ropes tumbled down and hung dangling from the ceiling; storming boards, brought from hidden recesses in the wall, were fixed to the ribstalls; while vaulting horses of various shapes were wheeled, jumping stands were carried, from far-off corners and placed ready for use. Apparatus work began. Truly a wonderful sight, and liable to take away the breath of a casual, uninitiated observer!

This is the typical gymnasium of Stockholm. Naturally there are slight differences noticeable in those of different schools, such as varying size, floor space, or arrangement of apparatus; but the salient points are the same — abundant apparatus, carefully arranged so as not to interfere with the floor space, easy of access, and capable of being moved quickly and quietly by the children themselves. I visited several during my stay in the northern capital, and each time the wonder of them struck me afresh. The Katarina Skola, a primary school, in which are found the poorest children of Stockholm, possesses one of the largest; Frou Almquist's Samskola, a large private co-education school, has one of the best fitted; the Valhalla Vägen School, a large new secondary school, contains two, each beautifully furnished.

These gymnasia are in constant use, but only for their own purpose, or for indoor games. Sometimes the lines of a badminton court are painted in white on the floor, but for the most part the games played in them

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are the ball, or running, or song games, which form a regular part of the ordinary gymnastic lesson.

The frequency of these lessons varies in different schools. In most of the secondary schools each child (boys and girls being treated alike) has four lessons a week, varying from three-quarters of an hour to an hour in length. In the primary schools the number is fewer, in some cases being three a week, in others only two. Apparently the minimum allowed by the State is two lessons a week.

The number of children in each class varies considerably, but usually the average is between fifty and sixty, though occasionally this number is far exceeded. For instance, in the Norra Latin Läroverket the junior class contained 100 pupils, that of the middle school 175. And though the objection may be raised that with such large classes individual attention must, of necessity, be reduced to a minimum, yet the conditions of work are such that great individual care is taken. For in nearly every school in Stockholm the teacher at the head of the gymnastic department is a specially trained adept, who has made gymnastics, both practical and theoretical, his study for years. In the case of the boys' schools, this head teacher is always a whilom student of the Central Institute, an ex-member of the Swedish Army, and, in several cases in Stockholm at least, a present-day instructor in the Institute where aforetime he was a pupil. With the girls' schools, also, the head teacher is a trained specialist, again usually connected in some capacity as instructor with the Central Institute, and thoroughly acquainted with present-day needs and developments. In their work these head teachers are supported by sub-teachers. In the case of the girls' schools these assistants are women students at the Cental Institute, or secondary teachers undergoing a special course of gymnastic instruction in one of the training "seminaries." To each assistant is given a small class of children, which she teaches under the supervision of her chief, and she has to report fully on the progress of each child under her care at the end of every term.

The arrangement in the boys' schools is somewhat different, though the plan is the same, for here the chief is assisted by "monitors"—boys who have given practical proof of their ability in the art of gymnastics, and receive special instruction every week from the head teacher himself as to the work in their individual departments during the ensuing lessons. In this way the whole school works under an organised system, and the progress of each child is noted. After infinite trouble and much searching I at last unearthed one school in the whole of Stockholm where some of the gymnastic classes were taken by the ordinary teachers. They indeed did it fairly well, but then in all probability from their childhood upwards they had been used to four lessons a week of three-quarters of an hour each.

Fig. 2.—Women Students at the Central Institute, Stockholm

The method of handling a class is as follows:—The children all troop in, line up, number off, and open ranks; then comes a period, usually about one-third of the whole lesson, occasionally less, during which free standing movements are executed, the whole class working in unison. Then a command is given, and immediately the class is broken up into numerous small sections, each consisting of six to eight or even ten, under the guidance of a "monitor" or sub-teacher. These small classes set to work in the briskest manner, though with no noise or confusion, at their apportioned piece of apparatus, practising for the most part exercises specially adapted for the strengthening of arms and shoulders, or for increasing the flexibility of the spine.

After a short interval has elapsed a whistle is sounded, absolute stillness ensues, a command is given, and once more the whole class assembles in union for more free standing exercises, marching, and running. Then comes the crowning point. Joy and anticipation are depicted on the children's bright faces, for well they know they have come to the part of the lesson set aside for "Running, Leaping, Jumping." Amid a breathless pause comes the order, "Out with the ap-

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paratus and divide for work." And then such a scene ensues as is not easily forgotten. Off rush the little contingents to their various posts, out comes the apparatus, and in the space of a few brief moments everything is ready and all have set to work. Children running, leaping, jumping; vaulting over horses, saddles, bars; racing up storming boards, laughing, shrieking for very joy. One would have thought that here indeed was "Bedlam let loose." A cursory view of this busy scene suggests pandemonium itself, but in reality it is a perfectly organised whole. The children in each little class were so placed that they were allotted work suitable to their varying degrees of power; a beginner was placed with other beginners; more advanced with more advanced; and so on up the ascending scale of proficiency, so that *the work of the class was arranged accordingly.*

At home one of the greatest difficulties that a gymnastic teacher has to contend with is this very one—the difficulty of procuring classes sufficiently homogeneous to be graded; in fact, to grade the class according to their physical, and not according to their mental abilities. But, to continue. After a space of about ten minutes (perhaps rather more) the class is whistled into quietness, the apparatus is put away, and the children once more assemble in ranks. Usually a short spell of marching ensues, followed by slow, even, respiratory movements. Then comes the final lining-up; then dismissal; and the children troop out, merry, wide-awake, alert, and looking as if they had spent a most enjoyable hour of activity.

These hours of active work produce a marked effect. For, as a whole, the children, no matter what their age, are very sturdy, self-reliant, fearless little people. True, sundry crooked ones are seen amongst them, sundry high-shouldered, narrow-chested individuals, but, taking them all round, they are well developed and strong. Their gymnastic work breeds in them a courage which must stand them in good stead all their life, and their constant use of apparatus renders them strong and accustomed to feats of endurance and pluck. This produces in them a power for concentrated effort and an indifference to the "difficulties" of hard work, and, consequently, helps in the most practical way possible to prepare them for the sterner aspects of life which must inevitably ensue when school-days are over. The work in the gymnasia of Stockholm is indeed well worth seeing, and contains for the visitor many valuable lessons, some few disappointments, and much pleasure and interest. It brings home the fact that, though moving in the right direction here in England, there yet remains much to be done among our schools and colleges before it can be said that their method and practice of physical training are perfection. Better conditions are necessary, for it is by looking after and ensuring their health that our children are rendered capable of profiting by the vast stores of knowledge brought to bear upon them in their school career. We need:—

1. Larger and better gymnasia, equipped with suitable apparatus; a greater frequency of lessons; a more rational method of clothing for the children, especially girls. For in this way the gymnastic work could advance enormously, and the "dulness of gymnastics" and the "monotony of the movements" would vanish. Although the use of so much apparatus, especially in the case of girls, is fraught with certain inherent dangers, and dangers against which one cannot guard too carefully, and unless the teacher is very alert there is great risk of sacrificing "good shape" and steady persevering practice for undue variety and change, yet the advantages outweigh the disadvantages; and where apparatus work can be obtained with a due proportion of free standing movements, and a fair share of æsthetic graceful motions, an ideal combination is produced, and one which in the long run must of necessity ensure the most beneficial results.

2. The appointment of fully qualified, carefully trained teachers for the posts of heads of the gymnastic department in all our schools.

3. A more careful and thorough system of medical inspection of the children in those schools.

4. A codification of a universal scheme throughout our whole educational system. For with these conditions the work could advance by leaps and bounds, and the nation as a whole would feel the result. We should then be able to realise the ideal we are endeavouring to set up for the improvement of our children's health and physical well-being, and for the building up of their moral, mental, and intellectual character.

SUPERANNUATION IN SCOTLAND.

THE expiry in April this year of the first septennial period of the Elementary Teachers' Superannuation Act necessitates by the terms of the Act a review of its operations and readjustment of its financial provisions in the light of the mortality returns during this period. The National Union of Teachers and the Educational Institute of Scotland have been engaged for some time on an investigation into the working of the Act so far as their own constituents are concerned. The Educational Institute of Scotland has placed the results of its inquiries before the public in a pamphlet entitled "The Teachers' Superannuation Act.—A Statement as to its Operations and a Plea for its Amendment." From this document it appears that the average pension paid to 118 teachers (91 men and 27 women) was £32 10*s.* 8*d.* at the age of sixty-five years. Against this is placed the fact that the average pension paid to policemen in the leading Scottish municipality was £63 4*s.* 6*d.* at the age of fifty-five. Meagre as is the average, the range of pensions paid to in-

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dividuals is even more pitiful. These vary from £17 10s. to £45 16s. 8d. for men, and from £14 10s. to £36 0s. 2d. for women. Facts such as these show a shameful conception of the value of teachers' services, and are, as the Report says, "little short of a national disgrace." A good deal has been heard of late on public platforms of the honour, dignity, and nobility of the teaching profession, but recognition of these will be looked for in vain in these starvation allowances paid to public servants who have been deprived of their means of livelihood avowedly in the interests of the State. Secondary-school teachers have from time to time put forth a plea for a superannuation scheme of their own, but infinitely better no pension scheme than the miserable pittances allowed to the elementary teachers by this Act.

There seem to be current in official circles two radically opposed ideas in regard to superannuation. One, enunciated recently by a Commission on Civil Service pensions, holds that superannuation allowances should be on such a scale as to maintain the individuals affected in the social position they had reached by their previous good service. This definition of superannuation is the one accepted and acted upon by all departments of the Civil Service and by all public corporations and associations that have established pension schemes. The departmental committee, however, upon whose report the Teachers' Superannuation Act is based, took the view that superannuation was an eleemosynary allowance to secure individuals from want. As this view was allowed to prevail, it follows that the allowances granted have no relation to salary, and do not in the case of the older teachers at least reach even the standard of a living wage. So long as this is accepted as the principle of superannuation, secondary-school teachers may be trusted to have nothing to do with it. Yet their claims to share in a just and equitable pension scheme have been enormously strengthened by the passing of the Act of 1902, and should be kept steadily to the front.

The old hard-and-fast line between elementary and secondary education has in large measure disappeared. At the passing of the Education Act of 1870, elementary education, as being the education of the masses, was regarded as peculiarly the concern of the State, while secondary education was looked upon as the privilege of the classes with which the State had no business. A new point of view has gradually emerged, and finds expression in the Act of 1902. It is that it is the business of the State to keep open all the avenues of intellectual opportunity from the bottom to the top of the educational system, and to make *la carrière ouverte aux talents* of even the most lowly born. Indeed, as Mr. Chamberlain has said, it may be questioned whether the enormous sums spent on elementary education bring any notable direct return. There is a return of an invaluable kind in the general happiness and elevation of the nation, but the money spent on secondary education, he holds, brings a direct commercial return by the production and development of those individuals who would be the captains and masters of industry of the future. However this may be, the place and function of secondary education in the national life are now assured, and the concrete embodiment of this is seen in the grants, both local and imperial, that now come to secondary schools. If secondary schools are to receive State subvention and State supervision, secondary-school teachers cannot much longer be excluded from the privileges and rights that pertain to public servants, and of which a reasonable pension scheme is one of the most highly valued and prized.

In France, Germany, Austria, and among Continental nations generally, secondary-school teachers have enjoyed some form of pension scheme for over half a century. The position of secondary-school teachers is as much sought after there as that of civil servants in our own country, and for precisely the same reasons, viz., that it gives security of tenure, a recognised social status, a fair salary, and a reasonable pension scheme. In these countries the growth of the pension scheme has been gradual and instructive. Originally the pension was little more than an annuity purchased by the teachers' own contributions, which were invested on favourable terms by the State. Then State and communal authorities came forward and increased these contributions by annual grants. During the past twenty years the appreciation of the services of secondary-school teachers has increased to such an extent that in a large number of cases contributions from the teachers have ceased altogether, and the State and communities now bear the entire burden. Secondary-school teachers in this country can hardly expect such tangible appreciation of their services, but with the example of other countries before them they should be encouraged to press for the recognition of their just claims for a reasonable pension scheme. The incidence of the burden could fairly be divided among three contributors, the State, the local authority, and teachers themselves. So many municipal authorities have already in operation pension schemes for municipal officials that the addition of secondary-school teachers to the number may fairly be regarded as within the bounds of practical politics.

Easy Latin Prose. By W. H. Spragge. xviii. + 120 pp. (Arnold.) 1s. 6d.—This book contains 102 extracts for retranslation, translated from Latin authors into simple English, the Latin for some of the words being given at the foot of the page. Opinions will differ whether such extracts are better than pieces of original English a little simplified or Latinised; we prefer the latter, but those who do not will find this a useful little book. The range of subjects is wide, and many of the pieces are interesting anecdotes. A short introduction deals with the complex sentence, and the arrangement of subordinate clauses. We do not like Mr. Spragge's English very much.

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OXFORD LOCAL EXAMINATIONS, 1905.

Hints for Teachers from the Examiners' Reports.

Preliminary.—The examiners in *higher arithmetic* report that the terminology of the metric system should be more generally known. Carelessness as to the decimal point in all questions involving decimal methods is very common.

Attention is drawn by the examiner in *English history* (1066–1399) to the following weak points:—

(1) Much learning of text-books or analyses by heart, resulting in knowledge imperfectly assimilated and unintelligently reproduced.

(2) Inaccuracy in dates, due to the attention being fixed on the last two figures, and neglect of the first two.

(3) Vagueness in geography; the atlas is an essential adjunct to a history lesson.

(4) Wordy answering; either excess in trivial detail, *e.g.*, the story of the White Ship, or from a notion that marks can be gained by mere verbosity.

Commenting on the papers dealing with the period 1399–1603, the examiner remarks:—"It is much to be desired that more attention should be paid to geography. On the whole, that is the weakest side of the papers, many candidates writing as if they had never seen, *e.g.*, Calais on a map, and being, therefore, quite reckless as to its position in France."

In the answers to the *English grammar* paper there was considerable vagueness as to the parsing of the relative and the indirect object. The meaning of an abstract noun was also not well grasped.

The weak spot in the answers on the book of *Scott* was usually the paraphrasing, in which both composition and punctuation left much to be desired; in some cases the selected passage was simply re-written with slight alterations in the order of the words; at other times the paraphrase consisted of clauses which had neither grammatical nor logical coherence.

The prepared *Latin* translation was not well done in many cases. Apparently an effort had been made in many centres to prepare "likely" passages; one passage was often translated as if by heart, while the rendering of the other passages was totally unlike the original. The unprepared sentences of common words in common constructions were, on the whole, poorly done.

The chief fault in the *French* papers was inaccuracy in translation. Many candidates indulged in fantastic guess-work, and it is worthy of notice that this occurred quite as much in the prepared work as in the "unseen." If anything, the prepared work was worse. The grammar was fairly satisfactory, but the irregular verbs were seldom mastered, and the reflexive conjugation was a dead letter to all but a very few candidates. In most cases the question was not even attempted. The parsing was poor throughout. The numbers and names of the months were generally known, but were spelt in the most fanciful manner. It was evident that many of the candidates had been taught by means of a *phonetic script*, and that it had had a detrimental effect on their spelling. Such spellings as *ou* for *août*, *canze* for *quinze*, *vin* for *vingt*, and even *disweet* for *dix-huit*—which occurred with regrettable frequency—were obviously due to this cause. In the same way, *peut* was confused with *peu*, and parsed as an adverb of manner.

The algebraical exercises in the *elementary mathematics* papers, being of about the usual average in point of ability, show very clearly the great difference between method and actual working. The methods used are generally excellent, and indicate good teaching; but the working is very often marred by inaccuracy. The figures in geometry were as a rule well drawn, though often very faintly. The work was for the most part neatly done. There was a frequent tendency to assume that which was to be proved.

Junior.—The examiner in *arithmetic* reports that numerous answers, involving such statements as "the lining of a small box with cheap material costs hundreds of pounds," and "the interest on £1,500 for three years at 3½ per cent. amounts to millions of pounds," show the necessity of the teacher's insisting on the invariable consideration of an answer as to its reasonableness. The question on the metric system gave no proof that this part of the syllabus had received the attention it deserves. The meaning and object of "approximation" were not generally appreciated. The problems seemed to indicate that insufficient thought was given to the questions before commencing work.

A large number of candidates who offered *ancient history* wrote general accounts of the events, about which questions were asked, without arranging their facts in the proper order of sequence, and without being able to give the names of persons and places, which were required. The geography, in many cases, should have been studied more carefully.

The weak points in *English history* (1815–1871) are:—

(1) A tendency to go into too great detail in some questions where width and variety of points are rather sought for.

(2) Sometimes the exact question is inadequately appreciated, and too much narrative is given, or results are added when causes only are asked, or the like.

(3) There is often a failure to discriminate between the more and the less important issues: for instance, in a description of the career of a statesman, the trivial matters are given as much prominence as the more weighty.

In *composition*, the greater number of the candidates appear to have found considerable difficulty in doing the paraphrase. Many evaded all the important points, though a certain number did it creditably.

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The chief points for mention in the answers to the *geography* paper are:—

(1) In some cases the candidates appear to have attempted to answer a question before they had grasped its point.

(2) The maps, on the whole, were the part of the paper which was done the best; but perhaps it would be desirable to say that accuracy in placing of towns is absolutely essential.

(3) The questions which asked for precise facts were better done than the more general questions which required a comparison between countries or an account of physical phenomena.

On the whole, the work of the candidates on the geography of the British Isles has been of a low-grade character, in many cases very great ignorance being displayed. The most striking feature about the answers is their irrelevance. The answers are, in many cases, too long and discursive, and show an incapacity to comprehend the meaning of the questions.

The sentences both from and into *French* were attempted with a considerable amount of success by a very large number of candidates. In accidence there is room for much improvement. Candidates are inclined occasionally to *paraphrase* rather than *translate*. There has been shown also throughout a considerable ignorance of the exact sense of words, and carelessness in the use of tenses and numbers. Ignorance of genders and accents was very conspicuous.

The frequency with which the denominators were entirely disregarded in the simplification of *algebraical* fractions seemed to denote more than carelessness. In the solution, again, of a simple fractional equation, a very large number of candidates assumed that the root must be positive, and at one stage or another in their solution dropped the *minus* sign. In the graphical solution of simultaneous equations, the scale should be so adjusted that at least some of the points marked should be intersections of ruled lines. Also, although two points are theoretically sufficient to determine a straight line, it is advisable, for the sake of accuracy, to find a larger number. The origin and axes should always be clearly marked, and it is well that the usual convention with regard to the direction of the axes should be adhered to. The theory of indices was very poorly known, the elementary laws being confused again and again.

The standard of the work in *geometry* seems to reach a higher and more uniform level than in recent years, and there is evidence that the difficulties connected with the newer methods of geometrical teaching are being successfully overcome. There still exists, however, considerable confusion as to what constitutes a logical sequence of reasoning. The diagrams are well done, but their use as a check on results otherwise obtained is scarcely understood. It would be as well if more attention were paid to this point. Common faults are: too small diagrams, taking "the base × the altitude" as the area of a triangle, and inability to define clearly objects which are evidently familiar. There is a tendency to define an isosceles triangle by the equality of its angles instead of its sides.

In *elementary experimental science*, answers to stock questions were ready, and were produced, often without the least reference to the question set; *e.g.*, a long description of the chemistry of hard water did duty for the difference between lime and chalk; Boyle's law and its proof for the law of Charles. The well-known difference of properties between a mechanical mixture and a chemical compound were not applied to the particular example set, showing how much had been left to mere memory, and how little had been done to quicken intelligence, or to grasp the bearing of one part of the subject upon another. Many candidates disregarded the directions given for performing the set experiments. On the other hand, when an experiment is required to be carried out by the candidates in their own way, a full account of the procedure should be given; a large number of candidates gave only very meagre details.

Very few candidates taking *theoretical chemistry* were able to describe any physical changes resulting on the explosion of a mixture of carbon monoxide and oxygen, and they were hazy about the volume of oxygen taking part in such a reaction. The calculations were done correctly as a rule, but in the answer to one question many candidates came to grief from their ignorance of the chemical formula of calcium hydrate.

The paper in *practical chemistry* consisted of two portions, (i) an easy piece of analysis with a very simple observation problem as a sort of "rider" to it, and (ii) a more difficult problem in observation. As to the former, the *analysis* was, generally speaking, satisfactorily done, and a large proportion of the work was excellent. The second question, in observation, revealed a serious weakness. Practically every one of the candidates had already carried out, and more or less described, the operation suggested, and most had done it twice in the course of their analysis. Yet less than five per cent. of them showed any power at all of describing it when they met it by itself. The *observation problem* proper proved too much for most of the candidates, not because it was hard, but because they did not carry out the instructions given. The few who did carry out the instructions did the problem very well.

SENIOR.—The style in which the *arithmetic* work was sent up was in many cases good, in others very poor, masses of figures being put down without explanation or any mention of the units involved. This was true not only of individuals, but also of centres, the inference being that in many schools the need for clear definition and neat work is not thoroughly grasped. Numbers of the candidates wasted much time by using very cumbrous methods. Weights and measures in the metric system proved stumbling-blocks to many, whilst the change from that to the British system or *vice versa* caused great confusion. Approximation in decimals was some-

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times well done, but the larger number of the candidates used contracted methods in a thoughtless way, either rejecting too many figures and so obtaining inaccurate results, or going to the other extreme.

The most common fault in *English history* (1066–1399) is failure to answer concisely and to the point. Many candidates would improve their answers considerably by writing with more deliberation, and by paying more attention to form and style. Often candidates appear burdened with their knowledge, and unable to discriminate what is really pertinent and important. As a result they write *far too much*, and spoil their answers by introducing a mass of irrelevant detail. The answers to the general questions were few and rarely satisfactory. The better candidates avoided them too much, for when they attempted them they generally obtained good marks.

Candidates still require to be taught to think out a question, and to try to grasp its exact meaning before they write their answers; for instance, when asked for the *reasons* for a policy they are too apt to rush into a long narrative of its *results*. More attention, too, should be paid to military history: the military question was generally attempted, but often with very poor results. Where a plan of the battle was made it was usually bad; generally, however, there was no attempt at an illustration.

Of the two parts into which the *English composition* paper was divided, the first, viz., the paraphrasing of Wordsworth's sonnet, proved too hard for the vast majority of the candidates. Most of them grasped the general idea without understanding the significance of the individual phrases. Some, however, missed the sense of the sonnet altogether. Others, too, appear to have no idea of what is meant by a paraphrase. Only a very small proportion rendered it with anything approaching exactitude.

The most obvious fault in the answers on *Shakespeare's "Henry V."* is a tendency to irrelevance, partly due to the fact that candidates have crammed up lists of facts which they found it necessary to insert somewhere, whether the question invited such a recital or not. Thus, for example, a considerable proportion of candidates inserted in the question on the sources of the play a list of anachronisms, on the ground that these represented deviations from Holinshed.

Referring to the answers to *Shakespeare's "Tempest,"* the examiner says: "Of independent thinking there is deplorably little, and the little there is often lacks coherence. Self-contradiction is very frequent. The questions bearing on the literary history of the play were rarely attempted and more rarely answered with anything like success."

The most marked feature of the *geography* answers was the irrelevance of a very large proportion of them. On two points information was noticeably deficient. The distribution of rain in both Europe and Australia was discussed by a very large number of candidates, but the season of its fall was hardly alluded to. Railway routes were asked for in two questions, but in scarcely a single instance was one given with accuracy.

The answers to the questions on the British Isles were almost invariably the worst. Many candidates displayed large acquaintance with minute details, but few seemed to understand the real essentials in the topography of Britain. The sense of perspective, of a correct mental picture of the main outlines of relief and of direction and distance, which showed itself frequently in the answers to questions on Asia, was almost entirely absent; few candidates gave really good answers to the question on the Pennines, and there was not a single satisfactory answer to that on the London Basin. For example, many candidates understood quite clearly the general relation of the Great Siberian Railway to the main physical features of the country traversed; presumably they knew nothing about the names or order of wayside stations. But in the case of the London and North-Western Railway a correct list of stations was often given for a long way out of London by candidates who showed little or no knowledge of the route followed by the line.

The easier *Latin prose* was, as a rule, poorly done, and it is quite clear that candidates should have more practice in doing such proses without dictionaries and grammars. The old system of learning grammar rules and exceptions has apparently been abandoned, owing to new theories of learning languages. But the result is somewhat disastrous, and the great majority of these exercises were disfigured by such mistakes as *senatus* feminine, *pars* masculine, *cibus* neuter, *corpus* masculine, and so on. There was a good deal of confusion between oratio obliqua and recta: "dixit *me* recipere," "dixit idem esse inter senatum et *vos*." The harder prose was done very fairly; more attention should be paid to the "unity of the subject" in the Latin period, and the use of gerunds and gerundives.

The easier unseen was not well done, and a number of candidates are content to guess at the sense; otherwise it is hard to understand why both *signum* and *signiferum* should be translated in the same piece as "standard." The remark made about genders in the prose will apply equally to the unseen, for a knowledge of genders would have saved the common mistake, "Nec *vis tantum* . . . movebat," "nor did so great force." The harder unseen was very well done by some—though even the better candidates were inclined to "embroider on" the Latin by introducing fresh ideas and phrases. Many thoughtless mistakes were make by others—over forty translating *tutores* as "safer," and almost as many *nacti* as "born." The gerundial use is not understood, and *ut vigilandum sit iis* was frequently translated by "one must keep a watch on those."

More proficiency was shown in answering the questions on *French grammar* than in applying the knowledge of elementary rules to the passages for translation. This was especially marked in

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the rendering of English into French, which failed to reach a fair standard of correctness. Simple constructions were violated, and accents very generally neglected or misplaced. The translation from French into English met with more success.

The elementary questions in *algebra* were generally well done, though there were many careless arithmetical errors. The solution of quadratic equations by means of a formula should not be encouraged; it was wrongly quoted or applied in nearly fifty per cent. of the cases where it was used. The general inability to solve simultaneous equations where, instead of the conventional x and y, their reciprocals are used, was remarkable. Few were able to give a clear statement by examples of the difference between permutations and combinations, and in general the attempts to deal with a problem on combinations were absurd. Candidates should be taught that these questions are entirely questions of common sense and not of formulæ. It may also be remarked that all through there seemed to be too much use of formulæ rather than of the application of first principles.

The most unsatisfactory work in *geometry* was done in the drawing of the necessary figures. A question which required the bisection of the vertical angle and the bisection of the base of a triangle scarcely ever produced a figure even approaching to correctness, although many candidates who failed in drawing the figure sent up an otherwise faultless proof. Few candidates, too, drew a figure to elucidate their definition of a tangent to a circle, and many of the best candidates appeared to think that neatness and accuracy of drawing were matters of no importance.

THE POLITICAL HISTORY OF ENGLAND, 1760–1837.[1]

THE reign of George III. and his two sons is the period of Tory rule in England. It is true that the first ten years are those of struggle to establish that rule, and that the last five are years of Whig triumph. But, with these exceptions—and they are partial for the first period—the seventy years covered by these volumes are the period during which the King again governed, as well as reigned, in a sense which had not been true during the reigns of the first two Georges. It is a period of great events. It begins with the triumphant close of the Seven Years' War; it includes the revolt of the American colonies, the wars of the French Revolution and of Napoleon, the era of "reaction" in constitutional matters, which was the result of those wars, and of the more liberal policy which gave us a large measure of free trade, the removal of disabilities from Protestant and Catholic dissenters, and the revolution which is known among us as the passing of *the* Reform Bill. And besides these Ireland is a growing problem. Total repression of Irish and Roman Catholics gave way to measures of attempted conciliation, measures which paved the way to the problems of our own day.

All these and many more matters are treated in a masterly way by the authors of these volumes. As far as possible, chronological order is observed, and the consequence is sometimes a violent change of subject from one paragraph to another. But the method has its advantages, especially in a period when international and constitutional questions were constantly reacting one on the other, and the reader will find these volumes, like the others of the same work, which we have previously reviewed, a storehouse of information, in which are embodied the results of the latest research. Each volume is provided, of course, with an index, and besides there are very full bibliographies.

In 1760 there were, properly speaking, neither Whigs nor Tories. The controversy between loyalty to a dynasty and loyalty to a religion which had introduced these parties into English politics had been buried on the field of Culloden. Instead, there were "connexions." And it was against these "connexions" that George III. raised the standard of a "patriot king." It was a great ideal, but was worked out by small men. And the consequence was that instead of abolishing party, the King's endeavours only made a new party, maintained by the same old methods of corruption that had been the weapons of the Whig oligarchy. Whether George would have succeeded better had he been self-denying enough to accept the alliance of Chatham is doubtful. Chatham's policy on many matters was eccentric, all but impossible, and his want of health at any rate prevented him from having a career. As it was, after many failures, George found in North the man who would be *his* minister and nothing else.

The story of this ten years' struggle is told in great detail, and the characters of the statesmen of the time are carefully described by Mr. Hunt, we would not say with a mixture of praise and blame as in the old histories, but in the newer historical spirit of setting forth the whole truth. This remark applies also to the story of the war with the American colonies. There is neither what has been the fashionable humility of declaring that England was entirely in the wrong, nor, on the other hand, the attribution of all the blunders to George III. It is pointed out that the English people at large were on the King's side, and that it was only statesmen opposing for the sake of opposition or merchants who suffered from interruption of trade that were in favour of the American contention. Franklin is no longer the simple hero of our childhood, and Fox's weaknesses are duly described. Mr. Hunt thinks that George III.'s personal rule came to an end with the failure of

[1] "The Political History of England." Vol. x., 1760–1801. By W. Hunt. xviii.+495 pp. Vol. xi., 1801–1837. By G. C. Brodrick and J. K. Fotheringham. xix.+486 pp. (Longmans.) 7s. 6d. net each.

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his American policy. He says (p. 229):—"The King was defeated. His system of personal government through ministers supported by his influence in Parliament received its death-blow from the ill-success of the American War. Before long he adopted a better system; he found a prime minister who could command the confidence of the nation, and he yielded himself, not always willingly, to his guidance." In this matter we would, with all due deference, submit an alternative explanation. The King still governed, even with (the younger) Pitt, and when that statesman came into collision with the King's conscience he had to withdraw from office. It is true that the old corruption ceased, and that under the stress of the French wars Pitt was supported by all but a handful of the nation and the Parliament, but the first thirty years of the nineteenth century saw the King's influence still strong, till it was destroyed by the revolution of 1832.

In the story of the wars in both these volumes we feel the influence of the naval school of historians and of Captain Mahan's works. We get more than the details of the great fights. Mr. Hunt also feels the effects of our late Boer War, to which, indeed, he sometimes alludes. And his condemnation is strong of those who take the part of the enemy. In the eleventh volume there are many modifications of previous judgments. Canning and Castlereagh were more nearly alike in their policy than used to be represented. Liverpool is praised for quietly conducting the administration. Whigs were not the only ones to introduce even constitutional reforms. The dismissal of the ministry in 1834 was not entirely the King's doing, but was suggested by Melbourne himself. Specially interesting are the comments on Catholic Emancipation (1829) and the new Poor Law. They were the effects, to a large extent, of Benthamism, and would not have been carried at any other time. If the authors of Catholic Emancipation had foreseen the results thereof, they would not have granted it. The new Socialism of our own day would not have made the Poor Law of 1834.

There are many other matters of which we might speak, but we close with a comparison of two opinions. The authors of vol. xi. say (p. 314): "The rebellion against tithes (in Ireland) . . . . had not the semblance of justification in law or reason. Every tenant who took part in it had inherited or acquired his farm, subject to payment of tithes. . . ." Mr. Hunt says (x. 92): "The tithe was specially burdensome to the poor, both because the rich pasture-lands of the wealthy were exempt from payment, while it was levied in little plots worked by the plough or spade of the peasant. . . ." While such authorities differ, when shall we get the whole truth about Ireland?

Preparatory Papers in Latin Grammar. By W. T. Hawkes. 45 pp. (Longmans.) 1s.—This book contains thirty-six pages in miscellaneous Latin grammar of the familiar type. It will be found useful in revision, so long as separate grammar papers are set in examinations.

FAIRY TALES OR SCIENCE?[1]

MR. SETON is one of the best-known of the writers who, combining distinguished literary gifts with an intimate knowledge of the daily lives of many kinds of animals, have responded to the increasing demand for interesting books on the lighter aspects of nature-study. In this he has been eminently successful; his stories have become deservedly popular, and have won praise on all hands. His power of investing his subjects with a vivid "human interest" is counted one of his highest recommendations, and in this his latest book the power is perhaps drawn upon to a greater extent than in any of his previous works which we remember. The title, "Animal Heroes," in itself leads one to expect accounts of animals in which certain estimable qualities are displayed, and will doubtless attract all readers who take delight in what may, without offence, be called the sentimental side of natural history.

The author defines a hero as an individual of unusual gifts and achievements, and the description certainly applies to each of the eight animals whose lives and adventures he relates. Such a definition would, in general, hardly cover the ground, but Mr. Seton implicitly amplifies it in the stories themselves: the dauntless courage of a bull-terrier, the social instincts of a wolf, the "love of home" of a homing pigeon, for examples, being skilfully held up for the admiration and sympathy of the reader.

In thus implying that certain qualities of animals are identical with the human virtues which receive the same names, Mr. Seton lays himself open to some criticism. Absence of fear in a well-bred bull-terrier is not necessarily courage in the ethical sense of the word, and the homing instinct of a pigeon is not necessarily more admirable than the same instinct of a limpet.

Heroism, as we understand the term, is, it will be admitted, impossible to any creature which is not self-conscious; and, therefore, to attribute heroism to an animal is implicitly to assert that the animal is capable of thinking about its own feelings. To the average reader this may seem a point of small importance, but it really furnishes the test by which the work is to be judged, not only of Mr. Seton, but also of a host of other popular nature-writers, who rely chiefly upon what is called "human interest" to make their animal stories and studies attractive.

If we assume that animals possess self-consciousness, we must logically credit them also with a moral sense of a sort, and with reasoning powers and forethought which seize and hold the imagination of the least scientific of readers. If, on the other hand, we believe that animals are mere automata, even such classical studies as,

[1] "Animal Heroes." By Ernest Thompson Seton. 363 pp., with illustrations (Constable.) 6s. net.
"The Religion of Nature." By E. Kay Robinson. xii.+215 pp. (Hodder and Stoughton.) 3s. 6d.

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say, those of Lord Avebury and Fabre upon insects lose much of their grip upon the popular mind; and a great many recent nature-books fall at once into the same category as the fairy tales of Hans Christian Andersen. A "fairy" tale of thinking and moral (or immoral) animals may, of course, be of enormous value in stimulating the imagination, *mais ce n'est pas la guerre*. It may be excellent literature, but it is not science.

Nowadays, when it is the fashion to take it for granted that very many animals reason, suffer, and enjoy as we ourselves do, it is well to bear in mind that there is another side to the question, and that not only such philosophers as Kant and Hume, but even Darwin himself, explicitly stated their belief that no animal is self-conscious.

Mr. Robinson, the editor of *The Country-Side*, makes an interesting contribution to the subject in his "Religion of Nature," and develops what seem to him the logical consequences of this conviction. He shows that many of the actions which appear to furnish evidence of moral sense and intelligent motive in animals are quite explicable on the assumption that they are instinctive and unintelligent. He points out that the usual behaviour of an injured animal is no proof that it is suffering, for the sensitive plant visibly shrinks and closes its leaflets when it is touched. On the other hand, he does not, in our opinion, satisfactorily prove that the animal does *not* consciously feel pain—it is notoriously difficult to prove a negative—and many of his readers will scarcely be prepared to accept his conclusion that "if we could remove human consciousness from the earth, the world of animals would contain no more happiness or unhappiness than the world of plants." On the assumption that the possession of self-consciousness sharply divides mankind from all other creatures, Mr. Robinson builds up a theory of religion which, he claims, is in harmony with scientific knowledge.

Although Mr. Robinson fails, we think, logically to establish his main theory, he certainly makes it clear that the amount of suffering in nature is far smaller than is generally supposed, and for this assurance alone all lovers of animals will be grateful to him.

The two books here noticed—so entirely different in aim and treatment—have this in common: they unintentionally emphasise the importance, in our educational methods, of preserving a rigorous distinction between mere fancy and hypothesis—however attractive—and sound logical principle. In no school-subject is there need for greater vigilance in this respect than in nature-study, because it is the one subject which is as yet neither safeguarded nor hampered by tradition.

Small Lessons on Great Truths. By A. K. Parker. 1–02 pp. (Methuen.) 1s. 6d. –This is a helpful little book for mothers who would put into their children's minds (or, may we say, draw out from their children's hearts?) the main truths of religion. The child will not have to unlearn when he grows up what this book has enforced.

TACITUS AND OTHER ROMAN STUDIES.[1]

THIS is a charming book, written with the spirit and grace and the sense of proportion which we expect in a Frenchman. M. Boissier in particular touches nothing which he does not adorn. His translator has done his task well; rarely does he slip into a vulgarism such as "like" (p. 193), or leave a word unnecessarily untranslated such as *genre* (p. 68). The book thus presents itself to us in an attractive form. No less welcome is it for its matter. There is need of a sensible estimate of Tacitus, of whom so much evil has been said. M. Boissier, however, will not allow the charge of insincerity, still less of wilful falsification, which is sometimes brought against him. By a thorough examination he is able to show that Tacitus has done no more at worst than incline to the gloomy side. And who would fail to do that, if he had passed through such experiences? The wonder would have been if fifteen years of tyranny and humiliation had not left a deep mark on him. A much shorter spell of humiliation left a deeper mark on Swift. M. Boissier brings the works of Tacitus into relation with his life, and he is able to throw light on both by judicious reference to Pliny. His conception of the historian's duties, and how he carried it out, forms the subject of one chapter; others deal with his judgment on the Caesars and his political opinions. All these subjects are treated with sound learning and a light touch. Both the student and the general reader will find this book worthy of their attention.

In the same volume are contained three other essays: on the Schools of Declamation at Rome, the Roman Journal, and the Poet Martial. The first is so intimately bound up with education that it has more than a passing interest here; and it has also a bearing on Tacitus, whose earliest work, the "Dialogue on Orators," is spoken of with just praise. The second deals with a subject which is not often treated, and in a characteristic way. It is amusing to find the author apologising for the Romans because they had not Parisian daily papers. He comes to the conclusion that they did very well without them, and we are quite at one with him in his view that our boasted modern inventions are not indispensable. We hope he is correct, too, in his optimism: "What is right always ends by coming to pass."

Martial, finally, is a useful foil to Tacitus: and his flattery of the great is enough to suggest that we have not lost much in the loss of those historians who took the imperial side. We have Velleius Paterculus as it is, and much good he does to us. On the whole, we may be content with our Tacitus; and here we can agree with M. Boissier that the right has come to pass in the survival of his works.

[1] "Tacitus, and other Roman Studies." By Gaston Boissier. Translated by W. G. Hutchison. x.+277 pp. (Constable.) 6s. net.

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SCHOOL TRAINING FOR THE HOME DUTIES OF WOMEN.[1]

By M. Cade,
Inspector of Domestic Economy Instruction to the L.C.C. Education Committee.

ANOTHER volume of special reports dealing with the school training for the home duties of women has been issued by the Board of Education. These reports treat of the teaching of domestic subjects in Belgium, Sweden, Norway, Denmark, Switzerland, and France in primary, secondary, adult, trade, and purely domestic economy schools. They have been drawn up, in all but two cases, by persons directly concerned with education in the respective countries. The present and the preceding volume show fairly comprehensively to what extent domestic subjects form part of the recognised curricula of the schools of other nations.

The history of the introduction of domestic subjects into the schools of the countries dealt with is both instructive and interesting. A reaction such as we are feeling in England had set in against the one-sided intellectual education, and more especially with regard to girls' education against what the late Prof. Withers characterised as the "sterile imitation of boys' schools on their worst side." Mrs. Hierta-Retzius, vice-president of the International Council of Women, and pioneer of domestic economy teaching in Sweden, remarks:—

"In former days, the Swedish wives of the upper as well as of the lower classes were very clever at housekeeping, cooking, baking, washing, needlework, embroidery, dressmaking, spinning, and weaving. They were a healthy, strong race of women, active in their homes, and very capable in every kind of practical work, in which they taught their daughters to take an active part at an early age. Neither mothers nor daughters were nervous, nor longing for pleasures and a 'change,' which is so characteristic of our age. But as industries were developed, many things, formerly manufactured at home, were bought ready-made. The girls' day schools for the upper classes developed, higher studies were pursued. The primary schools became more numerous, and were made obligatory; the daughters had to leave home early in the morning, and did not return till dinner was ready; they had no time, even in the afternoon, to help their mothers, for the lessons had to be learnt, and the mothers, who admired their children's 'great learning,' did not want them 'to slave' with practical work, which came to be considered as 'lower work.' The young thus became more and more unable and unwilling to help their mothers in household duties. It is easy to imagine how much knowledge of and liking for household duties and practical work was to be found in the generation succeeding the one just described."

In Switzerland it is noted:—

"that girls of all classes learn less and less at home, and in order to keep up the standard of home life opportunities must be furnished for them to learn homework outside the walls of home. . . . The domestic faculty must not be neglected because of the wider training now open to girls. It must be awakened and systematically trained, that it may not be lost or crowded out amongst other interests, and if a woman of any class undertakes to manage a home, she must understand its practical working."

A Labour Commission appointed by the Belgian Government reported that:—

"One of the principal causes of the misery of the working classes is the absence of order and economy in the home, the ignorance of the woman, her incompetence in the performance of domestic work. Consequently, administrators, masters, and workpeople alike demand measures that will ensure to the girl of the people, with a sufficient knowledge of domestic economy and hygiene, the ability to manage a home. It is towards the school that all look who desire to see the sentiment of personal dignity, the spirit of order, activity and economy, the love of home awakened in our girls; they claim that it is at the primary school, above all at the housewifery school, that the domestic education of our girls should be undertaken."

In the report on the Danish schools it is stated that:—

"Until recently, the idea of making cookery, &c., subjects of instruction in schools was thought quite out of place; it was considered entirely the business of the home to train girls in household duties. But as time went on, complaints of the deterioration of household skill in all classes grew louder and louder. School, and preparation for school, occupied an increasing proportion of the time of the girls in the higher schools, while amongst the poorer classes the increase of women's work in factories, &c., made it difficult, if not impossible, for mothers to teach their daughters, even if they knew how to do so. In the seventies and eighties a few advanced educationists began to advocate the introduction of Domestic Economy into schools, not only for the sake of the future homes, but also, as a good educational discipline, for the sake of the schools, whose work had been getting too much out of touch with practical life."

The teaching of needlework had been regarded for some time past as part of the education of girls. The instruction now became more systematised, and the high standard of proficiency attained in the Continental schools is proverbial. These reports contain many well-graded syllabuses of needlework, with methods of teaching, which should prove most useful to teachers in primary, secondary, and domestic economy schools.

The introduction of household occupations, apart from needlework, is in all cases of more recent date. Instruction in domestic subjects apparently often owed its initiation to private enterprise, but it was gradually included in the curricula of primary, secondary, and adult schools. Many helpful and suggestive schemes of work will be found in these reports. It is interesting to note that the experiences of the Scottish and English schools, especially those of the late London School Board, were largely utilised when dealing with these subjects. In each case the

[1] Special Reports on Educational Subjects. Vol. xvi. "School Training for the Home Duties of Women." 352 pp. (Wyman.) Price 1s 6d.

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instruction has developed on lines peculiar to the country in which it has been introduced, and in some respects improvements have been made on English methods, so that we, in turn, have something to learn from these Continental schools. The duration of each weekly cookery lesson in the primary schools seems to be from four to five hours, and almost invariably includes partaking of the prepared meal by the class as part of the lesson. This practical testing is regarded as the logical completion of the lesson, and is of great educational value, providing, as it does, instruction in serving, behaving, and waiting at table. In addition, the girls acquire a taste for cheap but well-prepared food which would otherwise be despised and neglected. In some instances the cost of the meals is covered by a small fee paid by each pupil, and in other cases the materials used in cooking appear to be regarded as consumable stock. A certain amount of incidental housewifery and laundry-work is also included.

What is known as the Gothenburg system has much to recommend it. In place of a weekly lesson of four or five hours, "a class of twenty-four girls receives a course of instruction lasting thirty consecutive school days, each school day or lesson being of seven hours' duration." In the villages and small towns the instruction is given chiefly by peripatetic teachers, who take the necessary equipment with them. Further courses of instruction are arranged in adult and continuation schools, which are not always evening schools. Housewifery, meaning the care of the house, does not appear to be taught in the primary and secondary schools, but receives a fair share of attention in the residential housekeeping schools, of which those in Switzerland seem most highly developed. In Belgium the technical institutes give both a trade and domestic economy training, in which the former or latter predominates, according to the type of school, and in Sweden workshops for children, somewhat analogous to the Recreation School at the Passmore Edwards Settlement, have been established.

In many instances the training given to the teachers seems inadequate in comparison to the importance of their work. These reports merit most careful attention at this time when the question of the right education for girls is being considered in many quarters. There is much to indicate that educationists in various European countries are by no means satisfied with the "sterile imitation of boys' schools" for girls of any class, and it is most instructive to note how one and all are casting about for a solution to the problem how to give a liberal education to the girl, and at the same time train and preserve her essentially womanly qualities.

The summary of a plea for higher education for women as women, addressed by Madame Yon-Lampérière to M. le Ministre de l'Instruction Publique, and included as an appendix to the report on the French schools, will repay careful study.

PRACTICAL STUDIES FOR SCHOOLS.[1]

The intellectual and moral training, and, indeed, to some extent the physical training also of boys and girls between the ages of seven and fourteen years, would be greatly improved if active and constructive work on the part of the children were largely substituted for ordinary class teaching, and if much of the present instruction were made to arise incidentally out of, and to be centred around, such work.

The aim and purpose of elementary instruction for many years was nothing more than the enabling of children to read and write and reckon. If we include in reading not only the art of reading aloud, but the cultivation of a taste for reading and the ability to apply the knowledge so gained to the practical needs of life, and if in teaching a child to write we teach him at the same time to express his ideas intelligibly in written language, and if, further, the child is practically taught the simplest rules of arithmetic, such a training would constitute all that is most essential in primary education. Gradually, however, the curriculum of elementary schools has been enlarged, and the problem of primary education has been complicated by the multiplication of subjects and by the introduction of many of the faulty methods of teaching which were for many years, and are still to some extent, prevalent in secondary schools. If practical studies, whether experimental or observational, or both, are to dominate the teaching, a fundamental alteration must be made in the methods of instruction, and certain subjects must be omitted from the curriculum, which is already overcrowded.

It is desirable that children from the earliest age should be taught to think. It may be said that thinking is a mental process that can be cultivated only at a later stage in the child's training. But this is not so. No one can have watched a child at play without recognising that, in the adjustment of the end in view to the means at the child's disposal, he is exercising the reasoning faculty. It would seem that it is only in school that the thinking process is allowed to remain unexercised and dormant. In order, however, that a child may think, he must be actively occupied with the consideration of concrete things. This, as is the case when the child is at play, is essential, and the contrast is very striking between the directed attention of the child when actively engaged in some work that interests him and his listless attitude in the school classroom. During the greater part of the school hours the "doing" faculty of the child is almost entirely ignored, and the training which he receives fails in consequence to develop along serviceable lines his natural spontaneous activity, and to encourage his ability to initiate and construct. These faults, inherent in our present system of elementary education, would be, it is believed, to a great extent removed if practical studies, involving hand-work and simple experimental methods of acquiring knowledge, were made an essential part of the teaching in every elementary school. At present no obligation exists to provide such practical teaching.

Exercises involving progressive handwork, experimental methods, and subjects of instruction requiring accurate observation may not produce the same manifest and repro-

[1] From the report of a British Association Committee, consisting of Sir Philip Magnus, M.P. (chairman), Mr. W. Mayhowe Heller (secretary), Sir W. de W. Abney, Mr. R. H. Adie, Prof. H. E. Armstrong, Miss A. J. Cooper, Miss L. J. Clarke, Mr. George Fletcher, Prof. R. A. Gregory, Principal Griffiths, Mr. A. D. Hall, Dr. A. J. Herbertson, Dr. C. W. Kimmins, Prof. J. Perry, Mrs. W. N. Shaw, Prof. A. Smithells, Dr. Lloyd Snape, Principal Reichel, Mr. H. Richardson, Mr. Harold Wager, Miss Edna Walter, and Prof. W. W. Watts, appointed to report upon the Course of Experimental, Observational, and Practical Studies most suitable for Elementary Schools. Presented at the York meeting of the Association.

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ducible results as those which occupy so large a part of the present curriculum. But the results would be more lasting and would afford an intellectual training exceeding any that may be obtained from literary studies alone. It is generally acknowledged that much of what is learned in the elementary school is forgotten soon after the child has left school, and a great part of the heavy cost of his education is thus practically wasted. The studies commonly pursued, owing to some extent to faulty methods, fail to fix in the mind the knowledge hastily acquired, and fail also as instruments of sound mental discipline, or as the means of forming permanently useful habits of thought. Much of what is now taught as arithmetic and English is open to this criticism. Time might be found for more practical methods of teaching by throwing overboard a large amount of the instruction given under these heads, and by co-ordinating to a great extent the teaching with the practical exercises which should form the basis of elementary training.

By associating the teaching of arithmetic and English with constructive work, the interest of the child would be stimulated and his education would be more closely directed to the subject of study. Moreover, he would not only acquire habits of accuracy by careful observation and manual exercise, but would learn to use number as an instrument of exact measurement, and, by describing what he had seen and done, to express his ideas in clear and intelligible language. Reform is much needed in the teaching of these two subjects. Too much time is spent in teaching rules and processes which are seldom needed and which are far in advance of other subjects of more immediate value. The ease with which the results of arithmetical work may be tested by teachers, examiners and inspectors, has had the effect of exaggerating its importance, when pursued beyond its mere elements, and of encouraging practice in the working of complicated exercises of no possible practical value. It is in the teaching of arithmetic that the greatest reform is needed. The exercises should be closely connected with drawing and with measurement, and questions involving money calculations should be definite and concrete and have reference to the cost of materials with which the pupil is already familiar. There is no need for the use of any text-book. The things by which the child is surrounded and the questions arising out of the work with which he is practically engaged afford abundant opportunities of illustrating the simple processes which are all that the child need learn at this stage of his studies.

The ordinary English studies may be similarly modified and curtailed. Transcription, spelling, writing and dictation should all be included under the head of composition. Grammar, as ordinarily taught, may be regarded as altogether unnecessary and useless. The learning of history should be associated with geography, and although some systematic instruction may be desirable, much of what is most needful may be taught incidentally. The reading lessons should be so chosen as to impart a knowledge of national history and to excite the child's curiosity to know more, and for a certain time a child should be left among books, free to read what he likes, describing afterwards what he has read. Reading aloud should be cultivated, and composition should be taught not by requiring the child to write essays on subjects about which he knows next to nothing, but by describing things he has seen, events in which he has taken part, or work which he has done. By thus associating the teaching of arithmetic and English subjects with practical studies, which keep the child actively occupied—always putting forth energy, instead of passively taking in facts—time would be found for constructive work and careful observation, and the results of elementary education, instead of being, as they now are, too often fleeting and aimless, would create in the child permanent aptitudes for further study and activities which would prove of the utmost value in his subsequent work.

It may be said that in such a scheme of elementary education there would be no uniformity. Possibly not. But uniformity is not in itself an end to be aimed at. The uniformity ideal cramps the initiative of the teacher. There is ground for apprehension that the organisation of secondary education under State control may tend to destroy that variety and diversity of method which has its distinct advantages. The character of the teaching in elementary schools must vary with local requirements and surroundings. But although the principles underlying the teaching should be very much the same, there might and should be the greatest variety in the subjects to the teaching of which those principles are applied. For this reason it is undesirable to indicate too definitely the exact course of studies most suitable to elementary schools. Much must be left to the judgment and discretion of the head teacher, whose training should enable him to arrange courses of practical study adapted to the requirements of particular schools. Certain general principles, however, may be laid down, and typical courses might be prepared showing the progressive character of the instruction, and its connection with such subjects as arithmetic and English, including history, geography, literature and composition.

The first thing to determine is the kind of practical work most suitable to local requirements and to the ages and conditions of the school children. The practical work should in all cases begin with Kindergarten exercises, properly arranged, and with observation of common things, of the school surroundings and plant life. Until the higher standards are reached there need be no difference in the training of boys and girls. The Kindergarten exercises should be followed by a course of manual training in the case of boys, and of domestic teaching in the case of girls. For children of either sex there should be a parallel course of simple lessons in experimental science, to be varied in urban and rural districts, and in drawing, to be adapted in the later stages to constructive work in the case of boys, and to needlework in the case of girls.

The course of instruction in constructive work should consist largely, but not exclusively, of exercises in the use of wood-working and metal-working tools. Although wood is undoubtedly the most useful material for manual training, other familiar materials should be employed, and the exercises, which should be as varied as possible, should be such as help in the development of the constructive faculties and embody the representation of an idea. Great importance should always be attached to accuracy and to the maintenance of a high standard of workmanship, both for its moral influence and with a view to the formation of useful habits. This part of the subject has been fully dealt with in various papers by persons who have devoted considerable attention to manual training. It is important, however, to repeat here what was stated in a paper on the subject read at the meeting of the Association at Cambridge in 1904, that the course of instruction should be distinctly progressive, and should be made continuous throughout the standards by means of simple exercises, requiring the use of such tools as may be manipulated by very young children.

Outline courses of instruction in nature-study, in experimental science, and in domestic matters, may with advantage be consulted by the teachers, but official syllabuses should be regarded only as indicating some of the subjects which might be selected for study in elementary schools.

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Lessons in composition, geography, arithmetic and drawing, should have close reference to these subjects, leading the child to think for himself, and to desire further knowledge, and to enable him to realise more fully the meaning of the work in which he is engaged.

Useful suggestions as regards elementary science lessons will be found in the syllabus prepared for the Irish National Schools, entitled "Notes for Teachers in National Schools."

The teaching of domestic matters to young girls should be of a very elementary and practical character. The science lessons to be given in connection with the subject should have for their main object the inculcation of habits of accuracy and cleanliness. The importance of exact method, and of using vessels which are scrupulously clean, may best be illustrated by the simplest chemical manipulation, and the school should be furnished with a room—not necessarily a laboratory in the sense in which that term is generally employed—in which easy experiments may be performed by the children themselves. As lessons in cooking cannot be given usefully until the child has acquired some manipulative skill, and has reached the higher standards, it is better that the courses of experimental science should precede the practical teaching of that subject. It is a matter for consideration whether the science lessons should be combined with the teaching of cooking, illustrating as they arise some of its underlying principles, or whether they should run parallel with the instruction or should precede the practical teaching of the subject. Something may be said for each of these plans, but the balance of advantage is in favour of the last, attention being directed to the results of the scientific experiments with which the child would be previously familiar in explanation of cooking processes.

The selection of subjects for the science lessons and the arrangement of experiments to be performed by the children themselves demand much thought on the part of the teacher, and should not be undertaken without careful preparation. They should be such as would find full illustration in the practical teaching not only of cooking, but of housewifery and general hygiene. The lessons in cooking must be essentially practical. Demonstrations in class will not suffice. This is generally recognised, but it is important that the dishes to be prepared by the pupils should be selected with a view to economy, and should be such as might reasonably be provided in a poor man's home. All waste should be avoided. Nothing should be thrown away, and the child should be shown how to utilise portions of food which are too often regarded as useless. At best, however, only a foundation can be laid in an elementary school for further instruction in evening classes and in secondary schools, but the foundation should be solid and serviceable as far as it goes.

It is evident that teaching of the kind here indicated can be given only by well trained teachers. To secure instructors who are competent to make practical studies the essential part of elementary education, the principles underlying the curriculum of training colleges would need revision. It is indeed of the utmost importance that teachers in training should receive a sound literary education. No teacher can be efficient without literary culture. It is equally necessary that the training college should afford adequate instruction in the practice of teaching and in the history and theory of education; but, in addition to these subjects, practical work and the methods of directing it should occupy a much more prominent part in the curriculum than is at present allotted to it.

The study of experimental science, whether physical or biological, must be pursued so far as to enable the student to have a firm grip of his subject, and to be capable of arranging courses of lessons suitable to the requirements of children. The general training should be such as will enable the teacher to correlate the ordinary subjects of school instruction with the practical studies to be developed in the school. This is a branch of pedagogy to which it would seem that very little attention has been so far given. The dominating influence of examinations which teachers are required to pass, the insufficient time devoted to training in practical studies, whether in the laboratory or workshop, are among the causes which prevent training colleges, as at present organised, from affording the kind of education which experience has shown to be necessary to enable teachers to direct and to take part in the practical training of their scholars. It has been well said by an inspector who has had large experience that "few teachers on leaving the training college have realised what thoughtful teaching means. As a theory, they will agree that formation of habit and character should be, perhaps, the first aim of a school, but, finding it troublesome to adopt as a working hypothesis, they too often attempt to console themselves by calling it faddism. They consequently fall into routine methods and lack initiative, and, failing to realise that inquiry is the *rock-bottom* method in all teaching, they thankfully accept rules that will save them the trouble of thinking."

The reform of the training college curriculum is, therefore, the condition precedent to any satisfactory change in the character of the teaching given in our elementary schools; but it is no part of the work of the Committee to do more than to indicate in the barest outline the direction that such changes should take.

Of equal importance with the improvement of the training college curriculum is the appointment of inspectors who have themselves received a thorough training in practical studies and experimental teaching. An inspector who may have obtained the highest degree at one of our universities does not necessarily possess the qualifications for a good inspector. With the abolition of the system of payment on results, the duties of the inspector have become much more onerous, and different qualifications are needed for the proper discharge of his duties. He must be well grounded in the principles and methods of elementary teaching, in order to be able to ascertain whether the teaching is sound and efficient. He must be able not only to criticise but to suggest, and his criticism and his suggestions must be founded on personal experience, and must be directed towards showing both how good work may be done and how errors may be avoided. Such inspectors might be selected from among head teachers, not necessarily of elementary schools, who have acquired experience in arranging courses of study, and have been found most successful in organising and imparting instruction on the lines laid down in this report.

It will be seen, therefore, that in order to effect reforms in our elementary education in the direction of giving due weight to practical studies, it is necessary in the first place that the curriculum of our training colleges should be modified by introducing, to a larger extent than has yet been done, laboratory and workshop instruction, and by directing the attention of the students to approved methods of experimental teaching. It is equally essential that sympathetic and experienced inspectors should be appointed, who will pay due regard to the correlation of the several subjects of instruction, and will see that undue prominence is not given to any particular subject on account of the comparative facility of teaching it, and who, above all, will endeavour so to direct the school work that it shall encourage thinking, and develop constructive ability and aptitudes for study on the part of the children.

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THE TRAINING OF THE TEACHER OF DOMESTIC SCIENCE.[1]

By Mary E. Marsden.

In the early days of domestic science teaching almost the only qualification demanded of the teacher was the power of skilful manipulation. Much more is expected of the domestic science teacher of to-day than of her predecessor. Not only must she be proficient in the arts she practises, but she must be able to give reasons, based on scientific knowledge, for the processes she employs. She must understand something of child-nature and the laws of mental development, so that she may make the work progressive and encourage thought and initiative in her pupils, rather than unthinking imitation.

These increased demands on the present teacher of domestic science can be met, in the first place, by training as teachers only those who have had a good previous education. Students who have had a good secondary education are those best fitted for the work. The education given at a public high school in which careful training in the general principles of elementary science is included is an excellent basis for the special training in domestic science.

It is further desirable that, as a test of general knowledge, students should have passed some examination such as that of the London University Matriculation, or the Senior Local examination of the Oxford or the Cambridge University.

The ideal preparation for a domestic science course would be a science degree followed by the special training in domestic science. Until, however, the salaries have reached a much higher rate for teachers as well as for organisers of domestic science, this will not be practicable. The salaries of those engaged in the arduous and responsible work of the training of domestic science teachers are very low in comparison with the salaries paid to those who simply teach children.

So far as I have been able to learn, the London University, at the Goldsmiths' Training College, is the only authority that has offered for the teaching of domestic science an initial salary proportionate to the work. If our training schools are to be efficiently staffed, educational authorities must offer considerably higher salaries than those given at the present time. The teacher of domestic science cannot afford to do her work mainly from philanthropic motives.

In the meantime, however, it rests with the training schools to require a higher standard in their entrance examinations. From the fact that some training schools require no educational test, or an extremely low one, some people, including many headmistresses, have been led to believe that the girl whose attainments at school have been below the average can take up domestic science. This is an entirely wrong idea; such a girl is inevitably a failure as a teacher. There is one development of domestic science teaching which especially demands that the teacher shall have a good secondary education. I refer to domestic science teaching in the higher type of secondary schools (that is, those in which the pupils are not mainly drawn from elementary schools). If domestic science is to rank with other subjects in the curricula of such schools, the teacher must take equal educational and social rank with her colleagues. She can only be a capable teacher of her special subjects if a high standard of general education has been attained previous to her training.

Time of Training.—This is usually two years for those who take cookery, laundry-work, and housewifery only. If students take needlework and dressmaking in addition, the course generally lasts for three years. Those who take high-class cookery or advanced dressmaking must take an extended course of training.

Scope of Domestic Science Training.—This is increasing, we might almost say, yearly. About ten years ago, in certain schools, teachers of laundry-work were appointed who had received only three months' training. This included not only training in the art of laundry-work, but in teaching it. To-day, in the same schools, the teacher of laundry-work is not appointed at the ordinary scale of salary unless she is qualified to teach cookery and housewifery too. This requires a two years' course of training.

The idea is becoming general that we should aim at training the teacher of domestic science rather than the teacher of one section of it (such as laundry-work, or cookery, or dressmaking).

Suggested Scheme of Training.—Such a scheme includes:—(*a*) *Arts*.—The practical work of cookery, laundry-work, and housewifery (including actual housekeeping and the keeping of real, not imaginary accounts), needlework and dressmaking. (*b*) *Science*.—Elementary physical measurements, chemistry, hygiene, physiology, first aid, and sick nursing.

These should have their right place in a course of domestic science. They should be treated as the foundation of the empirical arts. Unless the connection between science and the work done in kitchen and laundry be made an essential part of the scheme of teaching, domestic science loses greatly, whether regarded from the strictly educational or the utilitarian aspect. The domestic science teacher should show her pupils the necessity for understanding the reason for every method they employ, for tracing causes of failure, and for constant efforts to discover better and easier methods of work. The chemical laboratory should be regarded as a place for the working out and elucidation of problems or difficulties met with in the ordinary course of cookery, laundry-work, and housewifery. Scientific training leads to desire to experiment, to question methods in general use, and readiness to adopt new and better ones. It is this attitude of mind which we should encourage in teacher and in pupil. Practical science should include the methods for testing, approving, and valuing the ordinary materials and foodstuffs used in laundry and kitchen. If the training is to include so much science, more time must be given to it than has been possible hitherto. While we are not endeavouring to train physicists or chemists, yet we must realise that domestic economy is really applied physics and chemistry, often of a very high order of complexity. Frequent conferences between domestic science and science teachers are necessary in order that the subjects may be satisfactorily co-ordinated.

Instruction and Practice in Method of Teaching.—(1) The elements of psychology, the study of class management, and school organisation. (2) Blackboard drawing and elocution. (3) Actual practice in class teaching.

It is most *important* that practice in teaching should be gained by teaching pupils from both elementary and secondary schools, and also by teaching adults. The more varied the teacher's experience, the more efficiently will she carry on her work. To be successful, a teacher must be adaptable. She cannot be adaptable if she has been trained to teach in one groove; in fact, she can hardly avoid being stereotyped.

[1] An abstract of a paper read before the Educational Science Section of the British Association at York, 1906.

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Yet the Board of Education regulations as to recognised hours for a cookery diploma insist that the eighty hours of teaching practice which training schools find adequate for this section of the work must all be given in one type of school—viz., the elementary. It is only possible to give students a wider training if additional hours *beyond* the requisite limit are given. The idea that a teacher will teach any one grade of children better because she has never taught any other grade, seems illogical.

ADDITIONAL AIDS TO THE TRAINING OF DOMESTIC SCIENCE TEACHERS.—The training schools of domestic science should be conducted on lines similar to those of secondary training colleges. A reading-room and reference library, as well as a common room where students can meet after working hours are over, should be provided. Literary and debating societies and reading clubs should be encouraged among the students.

The specialist teacher of technical subjects loses much by the tendency to underestimate, possibly to ignore, the value of literary interests. Even during the busy years of training it is desirable that the students should be encouraged to take an interest in such things as general literature and the history of the day. These, though having no direct bearing on the work, are necessary as a means of culture.

HISTORY AND CURRENT EVENTS.

DURING the summer that has just ended, the Japanese War Department has conveyed teachers and students of the middle and higher schools and colleges to Manchuria and Korea free of charge, though the beneficiaries have had to pay a part of the cost of their food and lodging during the journey. Such things were not possible a hundred years ago, owing to the impossibility of communication. And with our larger Empire, separated by so many more miles of water than the Empire of our "Far Eastern" allies, it is not so easy for us to imitate what is certainly a good example. But in other ways, and on a more limited scale, it would be well if we were to know practically more of the Empire of which we here, in the British Isles, form a part, a part which yearly is becoming a smaller fraction of the whole. If the map of the world were drawn so that South Africa were on the left and Canada on the right, where would Great Britain come in? Would it not look like an outlying part of the Empire, while India or Australia would form the centre?

ASSUMING that the decision of the Court of Appeal in the West Riding educational case is final—there is a possibility of further appeal, and therefore of reversal—what an interesting light it throws on our methods of legislation! From the very beginning of our Parliamentary history there have been attempts made to get together an assembly "fit" to do what was required of it. And they have all failed. Legislation requires specialists, but the English people distrust specialists. Our latest historians tell us that mediæval legislation consisted more of programmes of ideals than such laws as Austin would regard as acts of a sovereign, and that we must not suppose that because laws were on the statute-book they were therefore carried out or obeyed. And to-day we collect some six or seven hundred gentlemen in the House of Commons who have not necessarily any knowledge of the laws they are asked to alter. Something is done by way of consultation with specialists, and the Bills are drafted by lawyers; but, even so, what a chaos English law still is, and increases in being. If we were planning a Utopia, is that such a law-making assembly as we should devise?

WE are constantly reminded, in the present-day history of our British Empire, of the history of that other empire which we built up or won and then lost before the eighteenth century had closed. As those quarrels arose because the home and colonial authorities could not agree as to the finances of the necessary defence against possible French attacks on our North American dominions, so now there is friction between Australia and Great Britain on the arrangements, financial and other, for providing a navy for the defence of Australia against the Pacific ambitions of other European States. Only last July, at a meeting representative of the Chambers of Commerce of the Empire, it was unanimously agreed that "it is the duty of the self-governing Colonies to participate in the cost of the defence of the Empire, but that the Colonies claim the privilege of keeping their own initiative as to the nature and mode of help which they may agree to offer." Is this, in its possibilities of divergence, an illustration of the evils of ultra-local government? or of the dangers of voluntaryism?

IN 1904 there was erected on the march between Chile and Argentina a colossal statue of the Christ. So busy was Europe at that time in wars and rumours of wars that the news of this symbolic event has only just reached us. But it seemed to us so important, that even now we would record it among our "current events." Chile and Argentina have had many disputes arising out of frontier squabbles, but these are now happily at an end. And to commemorate the establishment of an eternal peace, the peoples of the two countries have, at the instigation of a Christian bishop, erected this memorial. The "working" men and women of the two countries have placed on the pedestal bronze tablets with the inscriptions: "Peace on earth, goodwill to all men," "Sooner shall these mountains crumble to dust than Argentines and Chilians break the peace, which, at the feet of Christ the Redeemer, they have sworn to maintain." Many are the reflections possible on this significant event; but we must confine ourselves to reminding our readers of the memorial erected near Jordan by the tribes of Israel, and of the many "perpetual" peaces which have so often disappointed Christendom. *This* peace looks more promising.

ITEMS OF INTEREST.

GENERAL.

A SERIES of articles dealing with Public School Education, written chiefly by schoolmasters, commenced in the *Times* of September 10th. Up to the time of writing this note, the contributions to the series have been: (1) Classical Studies, by Mr. T. E. Page, September 10th; (2) The Teaching of Mathematics, by Mr. T. J. Garstang, September 13th; (3) The Teaching of History, by Mr. A. Hassall, September 15th; (4) Science, by Mr. W. D. Eggar, September 20th; (5) Modern Languages, by Mr. F. Storr, September 22nd. Mr. Page pleads with his usual dignity and force for a sensible consideration of the essentials of a liberal education attainable by the average boy at school. All men of science are not Philistines, nor are the interests of all classical scholars and teachers limited to the literature of the past. Let those who have noble aspirations, whether representatives of science or the humanities, unite to decide what should be retained of each group of subjects in the curricula of our schools. "For assuredly no form of education can justly be called 'liberal' in which the study of science and preparation for active life are not associated as their necessary complement with that study of polite letters to which classical learning is certainly the best, and possibly the indispensable, foundation."

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Mr. Garstang traces recent changes in mathematical teaching, the ideal of which he considers "will aim at that harmony of the abstract and concrete, of the general character and particular case, which, on the one hand, allows human imagination all liberty of suggestion, but, on the other hand, trains human reason for service in a hard material world of fact." Mr. Hassall believes that the teaching of history will certainly develop in schools. "At present the tendency in the public schools is to pay too much regard to mediæval and modern history, and to neglect ancient history; and there is a danger that too much time is being given to the mere acquisition of knowledge, too little time to the form of the essay." The text upon which Mr. Eggar writes is chiefly Prof. Armstrong's article, "Is School Science Worth Having?" in the May number of The School World. If our technical colleges demanded a sound general education and perhaps less science Mr. Eggar thinks there would be an improvement in the work of the pupils. He "feels strongly that before a boy begins to devote more than half his time to mathematics and science he should have qualified in English, including history and geography, Latin, and either French or German. The best work in a school laboratory is always done by boys who have reached a reasonable standard in other subjects first."

Mr. Storr lays down the sound principle that no teacher can now be considered efficient who cannot speak the languages he professes fluently and with approximate accurate pronunciation. He points out the folly of attempting to teach three foreign languages at once to a child of ten or eleven years, and shows that Greek might reasonably be omitted from the entrance scholarship examinations of public schools. But until the Universities of Oxford and Cambridge make French or German (with a *viva voce* test) obligatory in their entrance examinations, little improvement can be expected in the schools. It is proposed by the proprietors of the *Times* to publish this series of articles, with much other material, in book form, under the title of "The Public Schools from Within." The book will deal with all the more important aspects of public-school life and education, in a series of essays contributed by some thirty-five writers, who represent most of the leading public schools.

Among the subjects discussed at the annual meeting of the Library Association last month was that of the education of librarians. Mr. H. D. Roberts expressed the opinion that it should be a fundamental principle that no one should join a library staff unless he could produce satisfactory evidence of a good general education, and that no promotion should be made until the assistant gradually passed all the examinations of the association. In this connection he was pleased to notice a growing tendency on the part of the assistants to present themselves for these tests. The present examination syllabus has been in existence for three years, and the speaker deprecated any material modification thereof for the present. Mr. E. A. Baker advocated the inauguration of a more elementary course for beginners and one of a more advanced type for the more experienced assistants. Most of the speakers deplored the insufficient salaries received by the large majority of librarians, the president declaring that the wages of some foremen fitters were much higher. We fancy many similar invidious comparisons might be advanced in other cases, as, for instance, assistant-masters.

The unsatisfactory position of assistant-masters in secondary schools, and the sacrifice of the Teachers' Register, were among the subjects dealt with by Mr. C. H. Greene in a forcible address to the Incorporated Association of Assistant-Masters at the general meeting on September 8th. In the course of his address, Mr. Greene remarked that while nominally ready to admit that education depends upon the educators, the statesmen of this country still act on the assumption that it depends rather upon departments, examiners, and inspectors. Examinations, inspections, and reports multiply, but the position of the schoolmasters remains the same. While the problem of problems is to attract the ablest of men to the noblest of professions, the assistant-master remains in most schools an unconsidered cipher, still in most cases absolutely at the mercy of an inconsiderate headmaster, while his salary remains that of a second division clerk. The ancient theory was to find your inspiring head and leave all to him. But the modern theory, while it nominally leaves the headmaster free, determines the curriculum by public examinations and the methods of teaching by inspection and administrative regulation.

After Mr. Greene's address, the following resolutions relating to the Teachers' Register and the inspection of schools were considered by the meeting and adopted unanimously:—(1) That there should be a register of secondary teachers containing the names of those possessing the following qualifications: (*a*) a degree or its equivalent; (*b*) one year's post-graduate training in a recognised training college, or two years otherwise (*i.e.*, if training is not post-graduate), with the diploma or certificate of the institution at which the training has been obtained, or two years' service as a probationer, receiving a salary and under supervision, in a secondary school specially recognised for the purpose, such probation to be certified as satisfactory by the Board of Education; and (*c*) one year's continuous satisfactory service in a recognised secondary school. (2) That the Teachers' Register should contain a full record of: (*a*) academic attainments; (*b*) training or probation; and (*c*) experience; that the Register should be kept up to date without extra charge, and that all persons now on Column B should be placed on the Register. (3) That the duty of forming and maintaining such a Register should be referred to a representative professional council with powers of co-optation. (4) That any person previously registered who does not wish his name to appear on the reconstructed Register should be entitled to have the fee returned. (5) That the Board of Education should enforce the Register by means of the regulations for secondary schools. (6) That the reports of H.M. inspectors of secondary schools should be issued by the Board of Education in two parts: (*a*) a general report on the financial condition, buildings, and efficiency of the school, which, if published at all, shall be published *in extenso*; and (*b*) a detailed report, not intended for publication, which may contain criticisms and suggestions as to the work of individual masters and forms.

Mr. T. S. Dymond, H.M.I., lecturing to the members of the Royal Horticultural Society on September 11th, said that 20,000 children in rural districts are receiving practical instruction in gardening in elementary schools. He complained of the lack of attention given to this subject in rural grammar schools. There are not more than two grammar schools where agricultural science is still taught. Fault was found with the curricula of country grammar schools, and the speaker suggested the institution of courses on the physiology of plants in relation to the soil. Work on these lines is of the highest educational value, and if the horticultural colleges were filled with pupils who had

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gone through such courses their work would be much simplified. Science and practical horticulture ought to be taught as inter-dependent subjects. Moreover, drawing, arithmetic, and composition should be worked in with the course on gardening. Pupils could make a scale drawing of their garden plots, work out the profit on the crops grown, and explain, in the form of short essays, the different methods of cultivation.

THE London County Council has recently issued particulars of the evening classes about to be opened under its control. The session began on September 17th in the 253 institutions concerned, the subjects of instruction including arithmetic, geography, history, composition, and commercial subjects, such as shorthand and book-keeping; commercial instruction of a more advanced character will also be given in correspondence, banking, accountancy, and modern languages. The usual science and art classes will also meet weekly. During the current session special facilities have been provided for the study of English literature. Herein lectures will be given in six courses:—(i.) Shakespeare; (ii.) Cavalier and Puritan literature; (iii.) the literature of Anne's reign; (iv.) Dr. Johnson and his contemporaries; (v.) the romantic revival in English poetry; (vi.) aspects of Victorian literature. More advanced courses in these subjects also have been arranged. From a perusal of the Council's circular, it is evident that no effort has been spared to provide opportunities for instruction in a most comprehensive list of studies, ranging from laundry-work to painting from still life, from first-aid to geology, &c. Annual scholarships to the total value of £1,500 are offered by the Council to its students.

DR. BUTLER, the president of Columbia University, and Mr. Alfred Mosely, have arranged for five hundred British teachers to visit the schools of the United States this winter for the purpose of mutual help and criticism with regard to scholastic systems. Already two thousand applications have been received. The visit will last from two to six weeks from the date of arrival. Every facility for inspection will be placed at the disposal of the visitors, and the movement has been most carefully organised. Dr. Butler anticipates great mutual benefits from the visit, and there can be little doubt that nothing but good can result from such an interesting tour. All the branches of American education will be investigated. The chief towns which will be visited are New York, Newhaven, Boston, Philadelphia, Washington, Baltimore, Quebec, Montreal, Ottawa, and Toronto.

THE Board of Hygiene and Temperance, formed to promote the scientific teaching of these subjects, has arranged a course of eleven lectures during the coming session. Dr. Taylor will lecture weekly at the Birkbeck College, commencing on October 5th. The fees for the course are £2 2s.; intending students should communicate with the hon. org. secretary, Miss St. John Wileman, 54, Lancrost Road, Streatham Hill, London, S.W. The Board and others interested in its work as one of the direct preventives of physical deterioration recently memorialised the President of the Board of Education, and received from him the assurance of his cordial sympathy with their views, followed by the inclusion of the two subjects in the curriculum of the Code. The lectures about to be inaugurated are intended to provide experts for teaching and lecturing, and it is thought that many class-teachers will be glad of the opportunity thus given them of adding to their qualifications.

FROM the report of the third year of the Walworth Holiday School it appears that, on the average, 254 children attended fifteen days at the morning classes, and received instruction in games, ambulance, singing, drill, painting, and drawing. The afternoons were given up to swimming at the Newington Baths and to excursions to public parks, where tea was provided daily. Thanks to the action of the London County Council in providing a school free of charge, and to assistance in the matter of tram and train fares, the total expenses amounted to only £30. It should be added that the teaching staff—twenty-two in number—gave their services gratuitously. Walworth Holiday School, it will be remembered, is conducted by the Robert Browning Settlement, and the report gives ample evidence of the good work that may be done in schools of this character. It is to be hoped that local authorities generally will take full advantage of the permission afforded them by the new Education Bill to form vacation schools—in large towns especially they will constitute a great boon.

THE League of the Empire has issued a scheme for providing students all over the Empire with a graded series of Imperial text-books with the object, not only of furnishing the youth of the Empire with first-hand information, but also of providing, through the financial value of the publications, a fund for the advancement of education throughout the Empire, wherever the books are used. A series of three graduated text-books will be issued on the history and resources of the Empire, and the duties, rights, and privileges of its citizenship, prepared with the co-operation of the different countries of which the Empire is composed. The education departments of the various countries will be offered by the League either: (*a*) stereotype or electrotype plates, free of charge; (*b*) printed copies (at the cost of production only). It is evident that this scheme is of great importance, involving as it does the adoption of the principle of educational co-operation, which has been secured by the cordial support given to the efforts of the League by the various Governments and their education departments. The direction of the work has been undertaken by the history section of the League, the chairman of which is Prof. Bury, who is also the chairman of the editorial committee, while Prof. A. F. Pollard is the editor of the series.

IN the *Nineteenth Century* of last February Miss Florence B. Low published an article commenting unfavourably on the reading and general intelligence of the English high-school girl. The League of the Empire, dissenting from so sweeping a verdict, sent out all over the Empire a paper of questions on "What Girls Read." From the immense number of answers received, the conclusion is drawn that Tennyson is the favourite poet of British girls, though Shakespeare ranks first among the purely classic writers. Among novelists, Merriman is perhaps the most popular with British girls, though the early works of Anthony Hope are often mentioned, and the novels of Stanley Weyman and Lytton. Kipling leads among Colonial girls. Excessive magazine reading is shown not to prevail, but a great and intelligent interest is taken in the daily and weekly newspapers. History comes out as the girls' favourite study all over the Empire; while the most popular hobbies are reading, gardening, and collections of various sorts. The reader of the papers regrets that, as Miss Low stated, Mrs. Ewing's works are seldom read. The report directs attention to the careless spelling displayed by many girls in their answers, and concludes: "We may then, on the

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whole, take heart of grace in respect to the general culture of our girls."

From the results of the annual examination by the Oxford and Cambridge Schools Examination Board we learn that the total number of candidates for higher certificates was 2,054 (of these, 462 girls were candidates for letters only); 958 higher certificates were awarded, and 391 letters were given to girls. The total number of candidates for lower certificates was 1,046, and 570 certificates were awarded.

The new calendar of the University College Hospital Medical School explains the new arrangements made necessary by the formation of university centres for medical studies in connection with the University of London. The preliminary and intermediate courses will be taken at a university centre, whence the student will pass on to the Hospital Medical School. The Duke of Connaught is to open the new buildings early in November.

The Board of Education has just issued the annual volume of "Syllabuses and Lists of Apparatus applicable to Schools and Classes other than Elementary from August 1st, 1906, to July 31st, 1907." The volume, which has superseded the Directory of the former Science and Art Department, contains a number of helpful syllabuses of science subjects. We notice that the Board contemplates making certain changes in the examinations in practical plane and solid geometry, mathematics, and applied mechanics, to take effect in 1908. Any such changes will be announced not later than March, 1907.

The 1906–7 session of Birkbeck College opened on September 26th, when Sir Edward H. Busk gave the inaugural address in the theatre. The college is conducted in close relation with the University of London; courses of study for the university examinations are provided under recognised teachers of the university. These courses extend over thirty-eight weeks. For a fee of £7 10s. a student may take a three terms' day course in four subjects for either the Intermediate Arts or the Final B.A. examination, whilst the fees for similar courses for the B.Sc. examinations are about £10 higher. The college calendar gives details of syllabuses, text-books, scholarships, &c., and the list of successes in the previous session.

A comprehensive educational policy is usually adopted at the annual Trade Union Congress; and the congress held at Liverpool early in September was no exception to the rule. The chief planks of the platform upon which the organised workers of this country take their stand in matters of education are as follows:—(1) State maintenance of school children; (2) scientific physical education with medical inspection and records of the physical development of all children attending State schools, and skilled medical attendance for any child requiring same; (3) a national system of education under full popular control, free and secular, from the primary school to the university; (4) secondary and technical education, as an essential part of every child's education, to be secured by such an extension of the scholarship system as will place a maintenance scholarship within the reach of every child, and thus make it possible for all children to be full-time day pupils up to the age of sixteen; (5) the best intellectual and technical training to be provided for the teachers of the children, each educational district to train the number of pupil-teachers demanded by local needs, and for this purpose to establish training colleges, preferably in connection with universities or university colleges, the cost of such training to be met by adequate grants from the national Exchequer; (6) the cost of education to be met by grants from the Imperial Exchequer, and by the restoration of misappropriated educational endowments.

The Secretary of State for India has given notice that he is prepared to receive applications for appointment, otherwise than by examination, of probationers for the Indian Forest Service. In making these appointments he will act with the advice of a selection committee. Candidates must have attained the age of eighteen, and should not have attained the age of twenty-one, years on January 1st, 1906, but the committee will be empowered to recommend the relaxation of the higher limit in any case in which it may think fit. Candidates must possess a knowledge of chemistry, physics, and mechanics. A knowledge of botany and German will not be insisted on. An Assistant Conservator of Forests draws pay at the rate of Rs. 4,200 a year from the date of his reporting his arrival in India. In addition to the Indian appointments, it is proposed, at the request of the Secretary of State for the Colonies, to select one or two probationers for the Forest Department of Ceylon and that of the Federated Malay States. Applications must be made on a printed form to be obtained from the Secretary, Judicial and Public Department, India Office, Whitehall, S.W., and to be returned to him not later than Monday, October 8th, 1906.

Mr. John R. Airey has been appointed headmaster of the new secondary school at Morley.

Mr. A. R. Prestwich, senior mathematical master, King's College School, Wimbledon, has been appointed headmaster of Richmond School, Yorkshire.

The Rev. A. E. Crawley has been appointed headmaster of Derby School. For the last two years Mr. Crawley has been engaged in research work at Cambridge, but prior to that he held assistant-masterships at St. John's School, Leatherhead, Lancing College, and Bradfield College.

SCOTTISH.

An important circular has been issued by the Scotch Education Department directing attention to the new conditions for the training of pupil-teachers. School authorities have still the option of retaining the pupil-teacher system or of adopting that for junior students. In this circular it is pointed out that the general lines of study for pupil-teachers must conform to those laid down in the new regulations for junior students. Systematic records must be kept of the work and progress of pupil-teachers in the art of teaching, as well as in the other subjects of their curriculum. Examinations are to be held at regular intervals to test their progress, and the worked papers, along with all note-books and corrected exercises, are to be preserved for future reference. In future there will be no formal examination for pupil-teachers at the end of the second year, but at this stage they should be presented for the intermediate certificate in all the subjects of their curriculum. When special circumstances render it necessary, such presentation may be deferred until the end of the third year. Pupil-teachers at the close of their apprenticeship will be admitted as students in training, provided they are certified by H.M. inspector as having completed a satisfactory course of training. For this purpose the inspector may call for the production of the records of work, note-books, and examination papers, and may submit the pupil-teacher to further examination, either oral or written.

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THE Right Hon. Thomas Shaw, K.C., M.P., Lord Advocate, in opening a new school at Langside, took occasion to outline what he, as a private individual, thought should be the basis of the next Education Bill for Scotland. The School Board system, by reason of its flexibility in action and adaptation to circumstances, and because of the effectiveness of the local control that it secured, was peculiarly suited to a nation that had all along been keenly interested in education *per se*. In regard to the area of administration, he maintained that if they approved of the democratic principle of popular control, that could only be made effective and adequate by being local and on the spot. To secure this effective local control, and the interest which flowed from it, the best unit of area was the parish if they stuck by the present local government areas; but he would prefer to set up a Boundary Commission to delimit new areas which would preserve effective local control and at the same time have regard to the educational circumstances of each district.

IT is pleasing to note that one of the first acts of the Glasgow Provincial Committee for the Training of Teachers has been to pass a strong resolution about the inadequacy of the present superannuation scheme for Scottish teachers. "Whereas an adequate supply of fully-qualified teachers is a matter of urgent national importance, and whereas the present Superannuation scheme is such as to discourage the entrance of suitable candidates to the teaching profession, this Committee is strongly of opinion that there should be instituted, as early as possible, a scheme that will secure for teachers, at the time of their compulsory retiral, allowances reasonably proportional to their salaries and commensurate with their services to the State." This appeal, coming from a body directly responsible for the training of teachers, should have great weight with the Government, and, taken in conjunction with the memorial of the Scottish M.P.'s on the same subject, should lead to some definite action during the autumn session.

EVER since the passing of the Education Act of 1872 Scottish teachers have protested against being left to the tender mercies of small school boards, and have pleaded for some reasonable security of tenure in their office. Public opinion has from time to time been shocked by a flagrant example of capricious dismissal, and a general cry has arisen for a revision of the teachers' conditions of tenure, but nothing has really been done. The glaring injustice of the recent Gartmore dismissal seems likely to effect what years of agitation have failed to do. Mr. Harmsworth, M.P., with the approval of several of his colleagues, has brought in a one-clause Bill providing that "teachers shall in the event of dismissal have the right of appeal through the Scotch Education Department to the Secretary of State for Scotland, and that in the event of such an appeal the teacher so appealing shall be removable from office only by or with the consent of the Secretary for Scotland." Whatever be the fate of this Bill during the overcrowded autumn session, the mere production of the measure will serve as a warning to the five member school boards and make them chary of using their powers without just cause.

ST. ANDREW'S' Provincial Committee for the Training of Teachers has decided to set up in Dundee a new training college for King's students. As Dundee has already a training centre in connection with Dundee University College, the necessity for a separate training college involving a building for the purpose, special equipment, and a costly staff is not altogether apparent. The whole policy of the Department in recent years has been directed to increasing and strengthening the university connection of teacher candidates. The erection, therefore, of a new training centre entirely outside the university influence seems a retrograde step that calls for some explanation, both from the Provincial Committee which has made the proposal, and from the Department which has approved it.

ON the recommendation of the Edinburgh Provincial Committee, the course of professional training at St. George's Training College has been recognised for session 1906–7 as a centre for graduates preparing to teach in schools giving mainly a primary education. Graduates with honours desirous of securing the special qualification to teach some higher subject in an intermediate or secondary school may also qualify during session 1906–7 by attendance at this college, provided they have fulfilled the other conditions laid down in the new regulations for the training of teachers.

THE question of the teaching of Gaelic in Highland schools has come prominently to the front within recent years, and has now almost reached an acute stage. On the one hand, we have the typical Sassenach view that Gaelic is of no use commercially, and that the sooner it is decently buried the better. For many years Highlanders themselves were content to accept this position, and made no effort to preserve their national speech. But, encouraged by the success of their compatriots in Ireland and Wales, a Celtic party has at last arisen in the Highlands whose aim is to make Gaelic the "predominant party" in the schools. For all efforts to preserve a beautiful and sonorous language rarely fitted for the expression of every shade of human passion and sorrow there should be the fullest sympathy. If only the Celtic enthusiasts will confine themselves to the preservation of the Gaelic they will have the support of all lovers of their beautiful land and noble traditions. But they should take care that the fullest opportunity is given for the study of English, which must continue, as heretofore, the official language of the schools. In some districts of the Highlands the teachers who have no Gaelic are being harassed and worried by over-zealous Celts. These would fain give their *congé* to all who cannot lisp their shibboleth, which they regard as the only touchstone of worth and merit.

IRISH.

THE report of the Commissioners of National Education in Ireland for the school year 1905–6, just published, is a damning indictment of the action of the Treasury in reference to primary education. They lay it down as absolutely essential that "in order to enable us to deal with the large number of cases that have accumulated in consequence of the practical suspension of grants for the past four years it is necessary that a sum of £100,000 per annum should be placed at our disposal for the next five years, and that after that date a reduced sum, which can be decided upon beforehand, should be voted each year in the estimates." One inspector gives a description of a school in the neighbourhood of Belfast which seems to warrant the intervention of the Society for the Prevention of Cruelty to Children, and this is merely typical. There were 401 children present where there was only accommodation for 209. There were seventy-eight infants in a room 19 ft. by 9½ ft., sixty-four first-standard pupils in a room 14 ft. by 9½ ft. (with only one window which could be

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opened), and thirty-three first-standard children in a room 13½ ft. by 10 ft. The congestion was so great that lavatories, cloak-rooms, halls, and passages were utilised for class purposes. The quarrel with the Treasury has been going on for ten years, and Mr. Wyndham diverted the equivalent grant to other purposes. It is satisfactory to note that the increase of children in the schools is continuing, in spite of these drawbacks and in spite of emigration, the average attendance for 1900 being 478,224, for 1903 482,489, for 1904 483,897, and for last year 500,489.

The new Commissioner of Intermediate Education in succession to the Right Hon. the O'Conor Don, who died this summer, is Dr. B. C. A. Windle, F.R.S., president of Queen's College, Cork, whose experience in Birmingham and the south of Ireland should be of advantage to the Board.

The rules and programme of the Intermediate Board for 1907, in place of those rejected by the House of Commons in June, appeared at last on August 24th, although the title-page announces that they were sealed on June 19th. There may be some good explanation of this delay of more than two months; but none has been given, and grave inconvenience has been the result of the uncertainty as to what the new rules and programme exactly were going to be. The programme, as a matter of fact, is exactly the same as originally published in May, no objection having been made to it in Parliament. The May rules, to two of which objection was made, are replaced, with two or three minor changes, by the old rules for 1906, which are certainly not so good or satisfactory as those rejected. The changes are: (1) that trigonometry (as far as easy questions on the solution of triangles) is introduced as a Middle Grade subject, and (2) that bookkeeping is prescribed as a subject for the Senior Grade, in addition to the Junior and Middle Grades. The official calendar contains some new dates, and the syllabus for experimental science is included in the same pamphlet.

The Board appears to be feeling its way toward changes for next year, whereby it will be able to meet the views of Parliament, as well as insist on the standard it wished itself to establish this year. It has sent a circular to all heads of schools asking whether they would approve of two languages being made compulsory on all students in addition to English. It has been semi-officially stated that the policy is to make Latin compulsory for boys and French or German for girls. It is much to be desired that the Board would make a general statement of what its ideas of intermediate education are; this could be done in its official report, and the public would then know on what principles secondary education is being conducted. Unfortunately, while payment by results continues, educational questions will generally be considered by the schools from the point of view of the pecuniary loss or gain.

The Royal Commission on Trinity College held a formal sitting in London on August 31st and adjourned until October 16th, when it is proposed to meet in Dublin and take oral evidence. Meantime, a keen newspaper correspondence is going on as to the possibility of widening Trinity in such a way as to meet the views of Roman Catholics; while another solution suggested is to found a Roman Catholic college under Dublin University, and to give as a site the Royal Hospital and its grounds. The Cork Corporation has protested in set terms against a Roman Catholic college in Dublin as a complete settlement, and has demanded a university in Cork.

The results of the intermediate examinations which were held last June appeared early in September. The general summary is as follows:—

Boys.

	Senior	Middle	Junior	Preparatory	Total
Number examined ...	482	1305	3700	2303	7790
Number passed with honours	192	255	528	—	975
Number passed without honours	177	590	1819	1331	3917
Total number of passes	369	845	2347	1331	4892
Proportion per cent. of passes	76·5	64·7	63·4	57·8	62·8

Girls.

Number examined ...	210	516	1538	893	3177
Number passed with honours	71	84	142	—	297
Number passed without honours	87	243	882	486	1698
Total number of passes	158	327	1024	486	1995
Proportion per cent. of passes	75·2	63·4	65·7	54·4	62·8

The general percentage is almost exactly the same as in 1903 and 1904, but is considerably lower than last year, when for boys it was 70·4 and for girls 64·8.

WELSH.

The honours lists for the degree examinations, 1906, of the University of Wales, show a sparing allotment of first-class honours. There are none in Greek, one in Latin, one in English, one in Welsh, three in French, three in German, none in Hebrew, three in history, one in philosophy, one in political science, two in mathematics, none in physics, three in chemistry, none in botany, zoology, physiology, and geology, one in human anatomy. The subjects of the theses of the approved candidates for the M.A. degree were: in Greek, *The Structure and Scenic Arrangements of the Greek Theatre*; in Latin, *How far did Virgil, Horace and Tacitus supply the want of a middle voice in Latin by the use of the so-called Passive?* in English, *Books of Character of the Seventeenth Century*; in Welsh, *A Collection of the Poems of Sion Tudur*; in history, (1) *The Religious and Social Condition of Wales at the Outbreak of the Glyndwr Movement, with special reference to the attitude of the Clergy, both regular and secular*, and (2) *The Value of Clarendon as a Historian*: in philosophy, *The Relative Effects of Fatigue and Practice, including an Experimental Investigation with reference to certain varieties of mental work.*

A summer school in mining has been held at Cardiff, with seventy students in attendance in the mining and metallurgical departments. The progress in development of studies in mining in Glamorganshire has been excellent. Before a boy enters the mine he has opportunity to follow up such simple lessons as he has received in the day school by the evening class and technical class. Then the advanced students who have done well in the examinations are taken on tour, first round South Wales, then in the second year to the North Country or Scotland, finally to the Continent, principally Germany. To complete these opportunities of observation, the summer mining school is held for those willing to sacrifice three weeks' wages and

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a summer holiday to pursue their studies. In 1906, in the Government examinations, four Glamorgan students obtained first-class honours, eight second-class, and sixty-three Part I. honours. No less than 200 men, now colliery officials, have been in these classes.

AT the Welsh National Eisteddfod, held at Carnarvon, a strong appeal was made by Mr. Percival Greaves to the Welsh to follow the example of the Irish Folk-song Society. He pointed out that this society had rescued Irish airs from oblivion, and stated that one of Mr. Plunket Greene's most successful songs was picked up at Harlech from a wandering organ-grinder. Each language has its own rhythmic genius. Mr. Greaves suggested that a general folk-song society could be formed, or the airs could be collected locally and be submitted to experts in Welsh music with a view to their arrangement in simple forms for schools and the less cultivated musicians, and in art form for accomplished amateur and professional singers. Principal Reichel, who is well known as a lover of music, said Wales ought to look forward to the creation of a national school of music. Wales needs two things—the systematic collection and study of the old national airs and the deliberate cultivation of instrumental music. He looked forward to the time when the country would no longer allow a store of vitalising art, so simple yet so priceless, to be neglected and unemployed, and when the fine old tunes of the four nations would be familiar by constant repetition to the pupils of the schools, and would maintain within their walls an atmosphere of healthy and high-minded patriotism.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

A First German Reader. By D. L. Savory. viii.+108 pp. (Arnold.) 1*s.* 6*d.*—The first seventy pages are distinctly good work, on sound reform lines; they contain forty anecdotes, poems, &c., followed by German questions on the text and exercises in applied grammar and word-formation. There is also a section in which further exercises in grammar are given. So far we have only praise; but why did Mr. Savory yield to the demands of the Laodiceans, and give a vocabulary and sentences for retranslation? The book is well printed, and the proofs have been read with the care we expect from Mr. Savory.

Dent's Short French Readers. (1) *La Révolution française.* Edited by D. L. Savory. 6*d.* net. (2) *Contes du temps passé.* Part II. By Perrault. Edited by G. Heyer and H. Cammartin. (Dent.) 4*d.* net.—These are two further numbers of the series we noticed recently. In the first Mr. Savory selects short passages from Mignet, Michelet, Lamartine, and connects them with a running commentary of his own. There are explanatory notes at the bottom of the page in French, and at intervals there are exercises to be answered in French. The book is intended for students in their fourth year. The second book is a second-year reader, a continuant of the reader we have already noticed.

Ronsard et la Pléiade, Poésies Choisies. Edited by A. Mayenobe. 45 pp. (Blackie.) 4*d.*—We are glad to have this convenient selection, which can, of course, contain only the best-known poems, so limited is the space; otherwise it might have been desirable to add the works of other sixteenth-century lyric poets, especially Louise Labé. The introductions and notes, which are in French, give useful information. The printing, particularly of the poems, is not very careful.

G. Freytag, Die Journalisten. Edited by L. R. Gregor. xv.+231 pp. (Ginn.) 2*s.*—Freytag's famous comedy is familiar as a school text; we have several good editions. Mr. Gregor has done his work carefully; the introduction is perhaps a little scanty, but the text is well printed, the notes are good, and the vocabulary is practically complete.

Classics.

The Latin Hexameter: Hints for Sixth Forms. iii. + 48 pp., interleaved. By S. E. Winbolt. (Blackie.) 2*s.*—Some time since, we reviewed Mr. Winbolt's larger book on the Latin hexameter, an able work, which for the first time, in English at least, analysed types of the verse. This is an abridgment of the larger book arranged for practical work. It does not contain exercises, but hints on the technique of verse, pause, cæsura, the beginning and end of the verse, metrical versions, alliteration and musical quality, and rhythmical structure in general. It is a useful book to put in the hands of young composers.

Latin Syntax. By Rev. S. Tickell. 1–13 pp. (Neuman and Co.) 1*s.* 6*d.*—We have noticed Mr. Tickell's "English Analysis" before; it was a clear, logical, and interesting method of dealing with a dry subject. He now applies his method to Latin. All language is limitative, and when once the technicalities of this system are mastered it will be seen to be clear and persuasive. To anyone who wishes boys to get at the heart of the thing, the book is worth a trial. The system may be applied to any language. We are glad to see that the author is not afraid of calling *Comitia regibus creandis* an ungrammatical phrase, good Latin though it is.

Aids to Latin Translation. By Robert Weir. iv.+73 pp. 1*s.* 9*d.* Text of Passages analysed (in the above). 11 pp. 3*d.* (Oliver and Boyd.)—The aim of this book is stated to be "to help boys to arrive at the literal meaning of a passage by means of careful analysis of the structure of its sentences." A few pages are devoted to Latin syntax; then a passage of Caesar is printed, and analysed after this fashion: "The First sentence ends with *exeant.* The verb [*sic* for main verb] is *conantur*, and the subject *Helvetii.* The subject is not qualified, but the verb is qualified by . . .," and so on. Many men, many minds; some may find this analysis useful, especially illiterate persons working by themselves, but it could hardly find a place in a good school. Most of it would be done easily by a properly taught pupil, and the rest is better done *viva voce* by his master, who knows just how much help the pupil needs.

Arnold's Latin Texts. Edited by A. Evan Bernays. Cornelius Nepos: Miltiades, Themistocles, Lysander, Alcibiades, Iphicrates; Ovid in Exile; both edited by L. D. Wainwright. Ovid, Selections, by George Yeld. Tibullus, Selections, by J. F. Dobson. 63 pp. each. 8*d.*—These books are of the same character as the others we have reviewed. Each contains some thirty-two pages of text and the same of vocabulary. Long vowels (when not in position) are marked throughout in the Nepos and in half the Ovid. In the *Nepos* "the main thread of the more difficult, complex sentences is in heavier type." Nepos is certainly difficult for young pupils. The *Ovid* in truth should prove a useful book, and so should the *Ovid Selections*—which is the only one of the four which is printed clearly, in all the

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others the type being crushed up close, so as to try the eyes. The latter book contains some excellent short extracts. We suppose it is of no use to urge again that vocabularies should not be printed with Latin texts after the first Reader has been mastered. We also point out that English summaries of the subject are distinctly bad, especially when carried so far as in the *Tibullus* volume. These books are flimsily bound, and fastened with wire. One of them came to pieces as we opened it. They would not stand a week's wear with the ordinary schoolboy, we fear.

Tales of the Civil War: from the Third Book of Caesar's Civil War. Edited, with historical introduction, notes, maps, vocabularies, and English exercises, by W. D. Lorne. 100 pp. (Clarendon Press.)—The above title fairly describes the contents of the book. The work is made very, very easy, by English summaries to each scrap, by printing each sentence on a separate line (in most of the extracts), by many, many notes. The work is made difficult by the fact that each sentence appears to the eye to be equally important with all the rest, and by the erratic marking of quantities. Sometimes longs and sometimes shorts are marked, sometimes neither; but experience shows that the right system is to mark all the longs for beginners (implying that all the rest are short), and to do this until they are thoroughly familiar with the quantities—for two years, that is, or even more. The notes explain nearly everything. In fact, this is a book of the old type, with all the stock faults of English school-books, and in our opinion quite unsuited for class-work. It is a pity: the subject is good and unhackneyed.

Stories from Greek Tragedy. Retold by H. L. Havell. xxiv.+232 pp.; illustrated. (Harrap.) 1*s.* 6*d.*—It is a difficult thing to turn a drama into a story; even Charles Lamb (we say it with trembling) did not succeed very well, and Mr. Havell is not Charles Lamb. The stories are not bad, but they are a little dull. The mixture of modern narrative and archaic direct speech (see, *e.g.*, p. 109) is disagreeable. The problems of Greek plays, if we except the *Prometheus* and perhaps the *Alcestis*, are unsuited for children, and this book would be useless for any but children. The plays given are: Agamemnon, the Story of Orestes, Antigone, the Death of Hercules, Philoctetes, Medea, Alcestis, Hecuba. There is a short introduction on the Greek Drama and a pronouncing list of proper names.

The Moral Standpoint of Euripides. By W. H. S. Jones. 35 pp. (Blackie.) 2*s.* 6*d.* net.—We wish heartily to recommend this book. Small and unpretending as it is, it contains a vast deal of matter compressed—the student's materials for forming a judgment. Three pages contain ancient authorities for the religious and moral standpoints of Euripides; a short essay of twenty-three pages sums up the author's results (with quotations); the rest consists of a subject index to the poet's works under the following heads: Religion and Providence, Divination, Sanctuary, Immortality, Politics and Society, Friendship, Animals, Family Life, Slavery, the Individual, φύσις ἀνθρωπίνη, φρήν, νοῦς, and Personal Virtue. We cannot discuss Mr. Jones's views in detail, but we may mention the most important point he brings out: that Euripides regarded nature as non-moral and arbitrary, and the mind of man (νοῦς) as the only ruling principle. This is an interesting variation on the dictum of Anaxagoras.

The Euthyphro, Apology, and Crito, with Introductions, Translations, and Notes by F. M. Stawell. xxiv.+168 pp. (Dent.) 2*s.* 6*d.* net.—This is the second volume of Messrs. Dent's "Classical Library," in which text and translation are printed on opposite pages. We should have preferred the *Phaedo* to the *Euthyphro* as a pendant to the *Apology* and *Crito*; for these three dialogues have a very remarkable unity of subject, and are also distinguished for the nobility of their treatment: we have in them the grand style. The style of the translation is not quite so grand; it is, in fact, rather dull, nor is it always accurate. Who was Hippias of Elea? and why is περιεργάζεται translated, or paraphrased, "guilty" of inquiring? Is it right to say "they were wiser than me"? However, the translation will serve to show, what nothing could disguise, the nobility of the greatest soul of antiquity, and we hope it will be useful in spreading the knowledge of him amongst those who despise antiquity. Whether it will touch the self-satisfied British parent is doubtful; something more than delicate irony is needed for that, and he will probably go on as before, careless of his son's training. The introduction contains the best scene from the *Phaedo*; our old friend the "cock offered to Aesculapius" meets us once more. We are becoming quite fond of that cock, and we shall miss him sorely, when editors begin to learn that he did not belong specially to Aesculapius.

English.

A Midsummer Night's Dream. xix.+139 pp. (Blackie.) 1*s.* net.—This edition is included in the "Picture" Shakespeare series, and is deserving of praise for its illustrations no less than for the carefully selected editorial matter. In classes where preceding volumes of this series have been already used, this charming edition of a very beautiful play will be doubly welcome.

A Chapter on Essay Writing. By Alfred S. West. 31 pp. (Cambridge University Press.) 6*d.*—This is a reprint of some well-considered hints and maxims and directions for good English composition, which are included in Mr. West's book on English grammar. In this separate form they are handy and deserve a wide circulation.

The Sevenfold Gifts. By M. Wolseley-Lewis. 152 pp. (Murray.) 2*s.* 6*d.* net.—Manuals for Confirmation candidates abound. They all go over the same ground in very much the same manner, and this is neither better nor worse than the majority of such books. It puts in simple language the usual doctrinal teaching, and may be useful to docile minds.

Pierce the Ploughman's Crede. By W. W. Skeat. xxxii.+73 pp. (Clarendon Press.) 2*s.*—A thoroughly scholarly edition of a famous work. It has been transcribed and collated with other texts, and edited with care and thoroughness. The notes are full, and the preface is well done. In its present form it appears likely to supply the want of a standard edition of this old poem of the fourteenth century.

Scott's Old Mortality. By W. K. Leask. xii.+390 pp. (Blackie.) 1*s.* 6*d.*—In its present form this novel makes an excellent reading-book. The editor has taken his work seriously, and has provided an introduction which is brief but full and judicious enough within its limitations. The notes are exactly what are wanted; and a short glossary printed on the last page completes the volume, which it is a pleasure to commend.

Chats on Literature with my Children. By A. Logan Miller. 104 pp. (Relfe.) 1*s.*—A book that is characterised

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by the sort of simplicity which appeals to juvenile minds, and it ought to be useful. The writer ranges over a wide field and treats the subject most intelligently, keeping the object of the book well in view throughout. The method adopted is attractive, and should make many friends for this book among little people.

The Diary of Samuel Pepys. By G. Gregory Smith. xxxi.+800 pp. (Macmillan.) 5*s.* 6*d.*—This immortal work certainly deserved a place in the excellent "Globe" series, and at last it has found it. The handy size of the volume will commend it to a multitude of readers. The introduction is extremely valuable as well as interesting, for Mr. Smith goes over the ground he attempts to cover with great care, and singular fulness of treatment is secured by his method. The remarkable feature of this volume is the notes, which are splendid in all respects, and the index is voluminous. This is no place to discuss the text which the editor has prepared. The whole volume is worthy of its place in the "Globe" edition.

THREE booklets on varied subjects are: (1) *Pitman's Illustrated Recitations*, Book II., 4*d.*, a delightful little book, with the brown illustrations *sprinkled* over the pages in a way seen in only one or two books. (2) *Exercises in Spelling for Middle Forms*, 1–54 pp. (Relfe), 6*d.*, in which a new method (*i.e.* of printing difficult words with their meaning on one side of the page, and the dictation on the other) is adopted, each piece having its dictionary, so to speak. The method is ingenious; the pieces strike us as being very hard. (3) *Fables for Children.*—A praiseworthy attempt to show to little children the extreme danger of meddling with fire. The booklet (3*d.*) is published by the British Fire Prevention Committee, 1, Waterloo Place, Pall Mall, an address which should be kept. Out of the four prize fables, three are written by women. All schoolmasters are strongly recommended to obtain a prospectus from this committee.

The Imperial Reader. Edited by the Hon. W. P. Reeves and E. E. Speight. 400 pp. (Hodder and Stoughton.) 2*s.* 6*d.*—This book presents a descriptive account of the territories forming the British Empire, and our only complaint is that it contains 400 pages. If the book were one of a series of twenty, and each volume were as full as this, we should be still more pleased. Every country is represented by *bona fide* literary extracts from well-known writers, the road to India, *e.g.*, being dealt with in nine short extracts, three of which come from the pens of Lord Milner, Kinglake, and Mallock. A curious printer's error attributes the famous Sphynx chapter to Eastlake. We suppose the time is far away when a compulsory voyage will form part of the training of teachers.

The York Readers. Book V. 1–272 pp. (Bell.) 1*s.* 6*d.*—These readers have been constantly noticed in the pages of THE SCHOOL WORLD, and always with favour. The present copy is an admirable attempt to introduce children to literature by widely-chosen selections. That they are short is true; but in these days of libraries short pieces can easily be used by teachers to point to the authors themselves. Marryat and Hauff, Goldsmith and Fenimore Cooper, Borrow and Miss Mitford, are all represented. We take this opportunity of once more adding that the competent teacher who knows his authors is the brain which is to be placed at one end of the fishing-rod. Perhaps teachers will see something in the new society which is being formed for the study of the teaching of English.

Shelley's Adonais. 32 pp. 3*d.* net. *Macaulay's Life of Goldsmith.* 32 pp. 3*d.* net. (Horace Marshall.).—More "Carmelite Classics," reproducing all the features of this edition of good texts supplied with a minimum of editorial matter.

Black's Picture Lessons in English. Book I. (Black.) 6*d.*—A brilliantly illustrated and suggestive little book.

WE have also received two volumes (1*s.* 6*d.* net each) of the Poems in Blackie's Red Letter *Shakespeare.*

History.

Pioneers of Commerce. 48 pp. (Pitman.) 3*d.* paper, 4*d.* cloth.—A brief account, with plenty of pictures, of some dozen successful careers in the commercial world of last century. One wonders mildly what the morals of such books are, written as they are in the spirit of Smiles's "Self-Help." The most obvious are that it is well to be born with a strong constitution, and about a hundred years ago.

Tales of the Spanish Main. By M. Morris. xx.+357 pp. (Macmillan.) 2*s.* 6*d.*—This book consists of stories of Atlantic and Pacific adventure in the sixteenth and seventeenth centuries. There are two maps and eight other illustrations, an introduction, and a short bibliography. The stories are well told, and will delight the children who can get access to them in their school library and elsewhere.

A Short History of Great Britain. 343 pp. (Blackie.) 2*s.*—This, as the preface and title-page inform us, is an adaptation of Mr. Warner's "Brief Survey of British History," to which have been added drawings of historical details from authentic sources, a series of reproductions in monochrome of famous historical paintings, and many sketch maps. There is also, under the name of "Lessons on Civics," a good account of our present constitutions, imperial and local. The book is a reader, not a formal history; but the method of treatment is exceedingly good, and the pupil will learn thence the essentials of British, *i.e.* English and Scottish, history.

The Story of Exeter. By A. M. Shorto. 185 pp. (Commin, Exeter.) 1*s.* net.—A well-told and well-illustrated little book, intended for Exeter boys and girls. Incidents in English history which can be located in Exeter are set forth chronologically, so that Exeter children can connect them with their knowledge of the city in which they live. For ourselves, who have not that advantage, we were glad to turn to the map in Prof. Freeman's "Exeter," to follow the topography. But at the price, and under the circumstances, we perhaps should not expect this addition. It should be in the hands of all Exeter young people, and indeed of many others.

Britain Long Ago. By E. M. Wilmot-Buxton. xiii.+240 pp. (Harrap.) 1*s.* 6*d.*—In our young days there were two kinds of books, school-books and story-books. The former we had to read, the latter we liked to read, but were obliged to limit our quantity. That distinction is now abolished, it seems, and story-books, if only they are of the right kind, are now school-books. At least, in this book we have, published as a serious school-book, yet without notes, and only a "foreword" of five pages, which of course we skip, some fifty short stories, some of them connected in subject, gathered from old English and Celtic sources; and like the children in the fairy story, where eating and drinking nice things imparted useful information, we have only to read these delightful stories to learn the manners

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and customs of those far-off times. And all we can do is to exclaim, Happy twentieth-century children! But what sort of a training is it for serious, humdrum after-life? Of course, there are pictures.

Mathematics.

Chambers's "Thorough" Arithmetics. (Scheme B.) Teacher's Book, No. III. By W. Woodburn. 82 pp. (Chambers.) 9*d.* net.—This is a companion volume to Book III., noticed in The School World, vol. viii., p. 277. Besides answers and exercises in mental arithmetic, additional to the examples in the pupil's book, it contains notes that will sometimes be serviceable to young teachers.

Pitman's "Method" Arithmetics. Part IV. 52 pp. (Pitman and Sons.) Paper, 3*d.*; cloth, 4*d.* Answers to Part V. Cloth, 4*d.* net.—This Part contains applications of compound rules and weights and measures in bills; easy fractions; practice, simple and compound; and easy examples in simple proportion. The exercises are usually simple and sensible; the time given in Example 11, p. 45, would be a little difficult to estimate to the accuracy stated.

A New Shilling Arithmetic. By Charles Pendlebury, assisted by F. E. Robinson. xii.+176+xxxiv. pp. (Bell.) 1*s.* 4*d.* (with answers).—*Junior Arithmetic Examples.* By W. G. Borchardt. viii. + 171 + xl. pp. (Rivingtons.) 1*s.* 6*d.* (with answers).—These two books are, to a large extent, identical with the works by the same authors noticed in The School World, vol. viii., p. 315. The first book contains no treatment of the first four rules, while the second consists of examples and tables only.

Matriculation Graphs. By C. H. French and G. Osborn. 64 pp. (Clive.)—This book for beginners forms an excellent introduction to graphical methods; it is based on the work on graphs by the same authors, but is of a more elementary character. In the graphs of equations of the second and higher degrees the intervals at which the ordinates are calculated might with advantage be taken smaller, especially near the turning-points. The diagrams are but moderately good, and we do not see what good purpose is served by making the axes so heavy; the breadth of these lines will introduce serious error in the solution of equations should the pupil imitate the diagrams in the text.

Algebraic Geometry. A New Treatise on Analytical Conic Sections. By W. M. Baker. ii.+325+xxiii. pp. (Bell.) 6*s.*—The best feature of this book is, we think, the large number of easy examples; many are very simple; there are few, if any, the merit of which consists chiefly in the algebraic skill they demand of the pupil, and several in the various sets have real geometrical interest. Yet the difference between this work and its predecessors in the same field does not seem to us to be so considerable as the author appears to think, and the exposition is not, in our judgment, of any special merit. There is undoubtedly room for a new treatise on analytical conic sections, but the current text-books are, on their own lines, so good, that a new book, to be really worth writing, must strike out a new path.

Elementary Solid Geometry. By Frank Stanton Carey. iii.+116 pp. (Arnold.) 2*s.* 6*d.*—In this book, which appears in a new and enlarged edition, the leading theorems of solid geometry are presented in a simple and interesting way. The introduction of the elements at infinity offers considerable advantages in the way of simplifying proofs and, what is more important, of awakening the interest of the pupil. In addition to the usual theorems, the book contains a short chapter on projection, translation, rotation, and shearing, while there is a useful note on the primitive geometrical forms. Considerable space is given to the mensuration of the common solids, and there is a good collection of examples.

Science and Technology.

Elementary Science, for the Preliminary Examination (Section A: Chemistry). By H. W. Bausor. 176 pp. (Clive.) 2*s.*—This book has been specially prepared to meet the requirements of the Syllabus in Elementary Science (Section A) of the Preliminary Certificate Examination, which has superseded the former King's Scholarship Examination. The subject-matter relating to the syllabus is preceded by short chapters on the laws of chemical combination, the laws of Charles and Boyle, the atomic theory, chemical equivalents, and valency. Appropriate experiments (141 in number) are described in sufficient detail to enable students to obtain a satisfactory practical knowledge in the short time which is generally available. The volume successfully meets the requirements of the section of the syllabus.

Practical Physics. By W. R. Bower and J. Satterly. 398 pp. (Clive.) 4*s.* 6*d.*—In this volume the authors have endeavoured, with much success, to compile a practical course of over 260 experiments which meet the requirements of both elementary and advanced students. Certain experiments, marked by an asterisk, constitute a *home course*; and students who have limited opportunities to work in a well-equipped laboratory are recommended by the authors to carry out these experiments at home, and to devote all the time obtained in the laboratory to those which require more costly apparatus. The manner in which the subject is treated will not find favour with those teachers who are devoted to the heuristic method; for, throughout the whole volume, space is liberally allotted to the theoretical points involved in the performance of each experiment. This treatment of the subject seems inevitable if the volume is to be of the utmost service to students who have very limited time, and are preparing for an important examination. Novel treatment is evident in several sections; and it is particularly gratifying to notice a full treatment of weighing *by vibration* (p. 66). It is unfortunate that the English composition is occasionally at fault; as an example of this, we may quote the following sentence (p. 309):—"Hence the currents are inversely proportional to the lengths of wire in or the resistances of the circuit."

School Gardening for Little Children. By Lucy R. Latter. xxiv.+167 pp. (Sonnenschein.) 2*s.* 6*d.* net.—Miss Latter's success in the attempt to make nature-teaching the central point of the school life of little children, even in the heart of a town, should encourage infant-teachers everywhere to follow her example. In this charming little book they will find a detailed account of the methods she has found most successful, set forth with stimulating enthusiasm. Prof. Patrick Geddes contributes an interesting introduction on the pedagogics of the movement.

A First Course in Practical Botany. By G. F. Scott Elliot. viii.+344 pp. (Blackie.) 3*s.* 6*d.*—The author divides his course into twenty-five "days'" work, the word day being understood as a portion of time which, with good students, has been found to average from three to five hours. The work, therefore, represents a convenient course for one session. The book differs from the

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usual laboratory manual in giving theoretical explanations in immediate association with the practical instructions, and in the abundance of illustrations, many of which are new. The method of treatment throughout shows the hand of a skilful and experienced teacher, and the whole tendency of the book is, we think, to encourage the student in intelligent investigation along lines of his own. A large number of references to original authorities has been given, "in the hope that students may be encouraged to form the invaluable habit of consulting many books." It would be well if authors of scientific text-books followed this practice generally. The book is to be cordially recommended.

The Biology of the Frog. By Samuel J. Holmes. ix.+370 pp. (The Macmillan Co.) 6*s.* 6*d.* net.—Teachers and advanced students of zoology will extend a hearty welcome to this book, which probably stands alone as a concise statement of present-day knowledge of the structure and physiology of the frog. Various reasons have combined to give the frog its unique significance to the biologist and, as the author remarks, there is perhaps no animal, except man, which has been the subject of so many scientific investigations. The method here adopted of considering one animal as the theatre, as it were, of the action and reaction of the various vital forces has a value which was proved once for all by Huxley's classical monograph on the crayfish, for it creates an impression on the imagination of the student which probably could not be attained by any other means. Both as a scientific study of a "type," and as a compendium of information for reference, the work is one which cannot fail to be of great value. Mr. Holmes's style is lucid and convincing, and his language is precise, and at the same time refreshingly free from unnecessary technicalities. The only verbal lapse we have noticed is the employment of the term *archenteron*, instead of *mesenteron*, for the primitive alimentary canal of the frog. This is unfortunate, since the distinction between the two terms is of considerable importance. The book is excellently illustrated, and abundantly supplied with references.

Electric Wiring. (Fourth Edition.) By W. C. Clinton. 191 pp. (Murray.) 2*s.*—In the revision of this book an effort has been made to bring it up to date without unduly increasing its size. In the sections on arc and glow lamps and testing sets short accounts of the latest practical developments have been given. The volume will prove useful as an introduction to the art of indoor electric wiring; and it can be recommended to students preparing for the preliminary examination of the City and Guilds of London Institute in this subject.

Miscellaneous.

Paton's List of Schools and Tutors, 1906. 1*s.* 6*d.*—This is the ninth edition of a very useful book for parents selecting a school. The schools are classified in a great variety of ways, and it is easily possible to distinguish schools having chemical laboratories, agricultural departments, choral scholarships, and so on. Sensible advice is given on how to prepare boys for the Army, Navy, and various professions, and a list of scholarships and exhibitions available at the public schools is given. Altogether an interesting and useful book of reference.

Boy and Girl: should they be educated together? By Vivian Grey and E. S. Tylee. 1–72 pp. (Simpkin Marshall.) 1*s.*—This little book says almost all that can be said in favour of co-education. It instances America; it believes in the civilising power of the girl; it tells of Keswick and Bedales; and it quotes at length R. L. Stevenson as a convert to co-education. When all is said, many assert that America is beginning to repent; parents who have had children at co-educative schools are very much divided in opinion; and the author of "Catriona" is not yet looked on as a sound educational theorist. We should like to have full authorities for the statement that boys and girls sat at the same desks in Greece and Rome, and read Homer and Hesiod together. It may be a good thing to turn our society topsy-turvy; until this is done co-education will have to fight for its life in England.

Augustus Austen Leigh, Provost of King's College, Cambridge. A Record of College Reform. Edited by W. Austen Leigh. With portraits. xii.+306 pp. (Smith, Elder.) 8*s.* 6*d.* net.—Probably the subject of this memoir would have been the last person to expect such a tribute; and, indeed, we are bound to admit that the interest of his life is private rather than public. The college reform alluded to had to come, and Mr. Austen Leigh carried it through with tact; that is about all that can be said. He was a good man of business with sound judgment, whose opinion was valued in the University; but he was not great, intellectually or otherwise. The chronicle of an uneventful life has to be padded out with a great deal which will only appeal to his family or intimate friends. Kingsmen, however, will no doubt find the book interesting. Assuming the interest, the book is modestly and simply written, and in that respect matches the life of the Provost.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Apparatus for the Determination of the Coefficient of Linear Expansion of a Metal Tube.

THE apparatus for this determination may be fitted up quite easily from materials generally in use in a physical or chemical laboratory. As a rule, the determination of a coefficient of linear expansion involves a somewhat costly piece of apparatus, and, moreover, the experience of fitting up is denied the student when he is provided with the finished article. Beyond a few metal tubes, which may be obtained for a few pence, the following method is cheap and simple, and, if performed with the care and precaution which one may reasonably expect from a second-year student, is capable of yielding very fair results.

A long tube *a* of, say, brass, more than a metre long, has a needle soldered (eye-end) to it at *b* about two inches from one end. The end of the tube remote from *b* is fitted, by means of a short piece of indiarubber tubing, to the three-way tube at *c*. Continuing down, the three-way tube is fitted, by means of a piece of indiarubber tubing carrying a screw pinch-cock, to the outlet tube *d* of the glass flask (or tin can) *e*, which is used for generating steam. The brass tube is tightly clamped at *f*, and is maintained vertically by a ring of copper wire, clamped to a retort stand, at *g*. A micrometer screw-gauge, reading to the 1/100th of a millimetre, is clamped firmly in position at *b*.

A determination is carried out in the following manner:—Screw up the pinch-cock at *d* until the passage into the flask is completely closed. Connect *h*, by means of rubber

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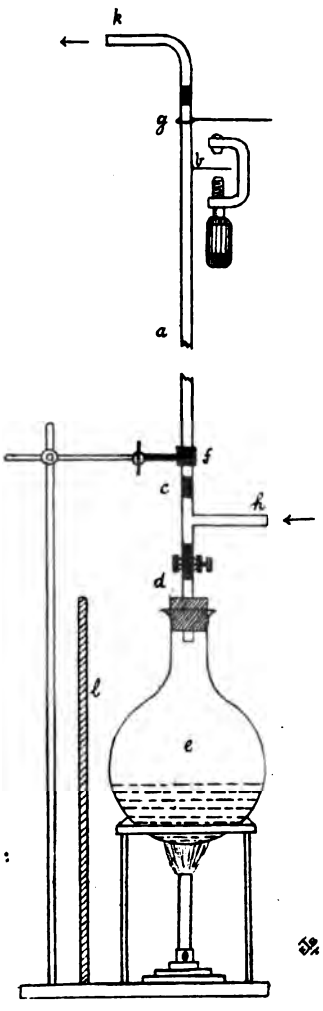
tubing, to a cold-water tap, and turn on the latter until a fairly rapid stream of water passes up the brass tube and out of the exit tube at *k*. (The latter is a piece of glass tubing bent at right angles and attached to the top of the brass tube by means of rubber tubing. It is preferable to have this elbow tube in communication with the sink by means of either glass or rubber tubing.) Take the temperature of the water after it has been passing for a few minutes; this will be the temperature of the brass tube.



Now measure carefully, with a metre rule, the length of the brass tube between the bottom of the needle and the point at which the tube is clamped, and then adjust the micrometer screw-gauge so that the top of the screw just touches the bottom of the needle. There is no difficulty whatever in making this adjustment as long as there is a good light behind the gauge and needle, *e.g.*, a window. Note down the reading of the gauge.

Turn off the cold-water tap, open the pinch-cock at *d*, and place a Bunsen burner under the flask. It is advisable to place a piece of board or other non-conducting material at *l* in order to prevent heat from passing to the retort stand by radiation. For this reason a piece might also be placed on the base of the retort stand as a support for the Bunsen and tripod.

When the water boils steam will pass rapidly up through the brass tube and out by the exit tube at *k*. It will now be seen that the needle has moved away from the top of the screw, due to the vertical expansion of the tube.

After the steam has passed through the tube for some little time, and there is no further expansion, adjust the micrometer screw-gauge so that the top of the screw just touches the bottom of the needle once more, and again take the reading.

The necessary data for the calculation of the coefficient of linear expansion of the tube has now been obtained. The following example is the result of an experiment carried out by a student in the school laboratory:—

Length of brass tube = 1000 mm.
Temperature of cold water = 12·3° C.
,, steam = 99·3° C. (Barometer = 741 mm.)
1st reading of micrometer screw-gauge = 4·18 mm.
2nd ,, ,, ,, = 2·56 mm.

∴ Expansion through 87° C. = 1·62 mm.

Then 1000 mm. of brass tube expand 1·62 mm. through 87° C.
∴ 1 ,, ,, expands 1·62 ,, 1° C.

$$\frac{1000 \times 87}{} = 0{\cdot}00001186$$

The following tubes, diameter about 2/5ths of an inch, are suitable for determinations similar to the above:—iron (0·000012), brass (0·000019), copper (0·000017), and glass (0·00000086). Since the needle cannot be fused into the glass tube, owing to the difference in expansion of glass and steel, a short piece of platinum wire may be fused in to take the place of the needle.

E. T. Bucknell.

St. Philip's Grammar School, and the Oratory School, Edgbaston, Birmingham.

Latin for London Matriculation.

In your kind notice of the "Matriculation Latin Construing Book," by Mr. A. F. Watt and myself, you express a regret that the introduction leads up, not to the understanding of a text, but to the "cramming of snippets." May I point out that the "snippets" to which your reviewer refers are intended as practice in the translation of a passage apart from its context, and that no one would be more sorry than we should if the London Matriculation candidate were to read no Latin of a less disconnected kind?

Latin without Latin literature is much on a level with "Hamlet" without the Prince, and in "Matriculation Selections from Latin Authors" we have endeavoured, by means of extracts of appreciable length from the great classic writers, to give learners some idea of the character of Latin literature during the century preceding the death of Augustus.

Nevertheless, the discontinuance of a Latin classic at matriculation, though it was doubtless an unavoidable concession to schoolmasters, is to be regretted; and it may be hoped that eventually examining bodies will see their way to follow the example of Oxford, and allow candidates to choose their own books within certain limits.

B. J. Hayes.

University Correspondence College, Burlington House, Cambridge.

I am glad to learn that the editors did not intend their book to be the whole Latin for matriculation, and I regret that a statement to this effect has been overlooked. Then it is stated that this book should lead up to the "Matriculation Selections from Latin Authors," by the same editors. The objection to the one book, however, applies to the other. Many, perhaps most of those who use these books will use no others, and will never read a complete work of any importance. I cordially agree with the editors in hoping that the London Matriculation may some day be reformed. At present it directly encourages cram.

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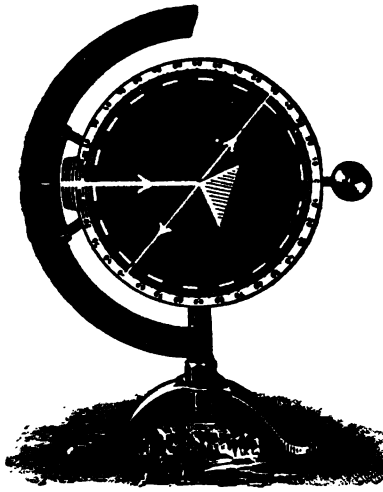

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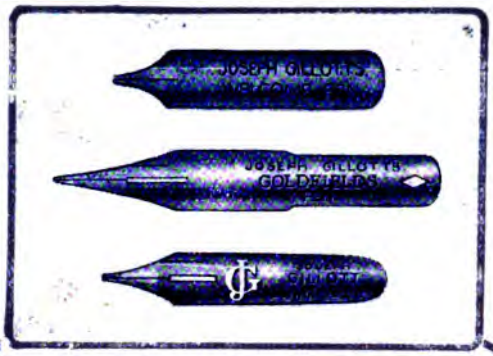

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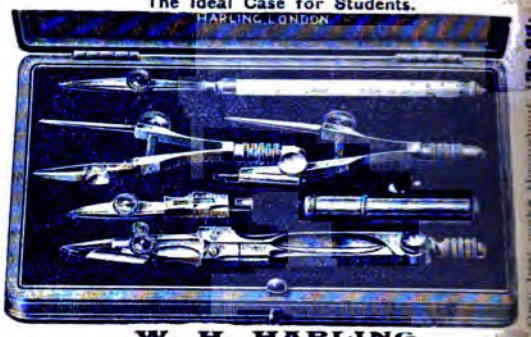

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THE ART OF ORAL QUESTIONING.

By T. RAYMONT, M.A.
Training Department, Goldsmiths' College, S.E.

THE purpose of the following notes is to deal in a strictly practical way with an important practical point in teaching. The reader will remark that we confine ourselves to *oral* questioning. A great deal might be said, and perhaps needs to be said, on the art of composing a paper of questions for a written examination, but that is not our present concern.

A time-honoured use of the question-and-answer mode of teaching is exemplified in the familiar religious catechism. This form of instruction is possibly justifiable on the ground that if a definite creed is to be taught, there are advantages in setting it down in very definite terms. But we must plead for an intelligent appreciation of those terms, and this means at least that, as a rule, many more questions and answers are necessary than appear on the printed page.

The history of teaching furnishes well-known instances of the application of the catechetical idea to other subjects than religion. Mangnall's Questions and Joyce's Dialogues are cases in point. These little systems have had their day, and, for all practical purposes, have ceased to be. To explain why would be to anticipate much of the substance of the following remarks.

In dealing with the use of questioning in the modern class-room, we must begin by drawing an important distinction, and the distinction will probably be best brought out by a consideration of two illustrative examples, of kinds which frequently occur in the course of a day's teaching. First, let us suppose that a junior form has listened to, or read, a descriptive account of the doings of Joan of Arc. Such a conversation as the following will perhaps take place subsequently between the teacher and certain pupils :—

Q. Why was there so much fighting in France in Henry VI.'s reign?

A. Because Henry VI. was called King of France, and the French were not willing to have him as king.

Q. What great city did the English wish to take?

A. Orleans.

Q. Who saved the city?

A. Joan of Arc.

Q. Who was she?

A. A peasant girl in a small French village.

Q. What kind of girl was she?

A. A good girl; a pious girl; a brave girl; a simple girl. (From various pupils.)

Q. What made her think of offering her help?

A. She said she was told to do so by an angel in a dream.

Q. What did her friends do?

A. They laughed at her, and tried to prevent her.

Q. Did Joan give up her plan?

A. No. She determined to see the king, and she did see him.

And so on. At this point we need not pause to inquire into the entire wisdom of the teacher's procedure. We merely observe that this general procedure is quite customary.

Our second example shall be from a lesson in arithmetic. Suppose that some preliminary work in fractions has been done, and that the solution of an easy complex fraction, say $\frac{2}{3}$ of $\frac{1}{5}$, is now proposed. Our imaginary conversation might proceed as follows :—

Q. How many fifths are there in a whole?

A. Five. (Here a straight line might be divided into five equal parts.)

Q. If each fifth were cut into three equal parts, how many parts would there be altogether?

A. Fifteen. (Let this be represented in the diagram by subdivision of the five parts.)

Q. And what part of the whole is each of these smaller parts?

A. A fifteenth.

Q. How much, then, is a third of a fifth?

A. A fifteenth.

Q. How shall we write that down?

A. (*after some hesitation*). $\frac{1}{3}$ of $\frac{1}{5} = \frac{1}{15}$.

Q. Look at the diagram, and tell me how many of the smaller parts make a third of *four*-fifths.

A. Four.

Q. Then what is a third of four-fifths?

A. Four-fifteenths.

Q. How shall we write that down?

A. $\frac{1}{3}$ of $\frac{4}{5} = \frac{4}{15}$. (A pupil does this.)

Q. If *one*-third of four-fifths is four-fifteenths, what will *two*-thirds of four-fifths be?

A. Eight-fifteenths.

Q. How shall we write that down?

A. $\frac{2}{3}$ of $\frac{4}{5} = \frac{8}{15}$.

No experienced teacher will suppose that the

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actual lesson would proceed with the smooth regularity suggested above. Little would be gained, however, by the attempt to transfer to print the "by-paths and indirect crooked ways" of the duller pupil. It is enough if we have fairly set down in a general way what would probably take place.

Now let us compare the two examples. In the first, the pupil has been led to recall certain facts, to exercise his memory; in the second, he has been led to think out a new fact on the basis of certain facts previously known, or, as we commonly say, to exercise his intelligence. The first involves the apprehension of facts; the second involves the apprehension of *relations between facts, i.e.,* it involves thinking. In the first, the facts are connected as a temporal series; in the second, they are connected by logical necessity. To question a class by the first method is a comparatively simple matter; to question a class by the second method is a thing that usually requires closer thought and longer practice.

We now see that it would hardly be possible to construct an arithmetical catechism, because the question-and-answer method is here robbed of all its value, unless the answers are of the pupils' own making. We might have a catechism of history, provided we are contented with the bare facts, and provided we do not mind if most of the life and soul is knocked out of the teaching.

Some people have set up a distinction between "fact-subjects," such as history and geography, and "faculty-subjects," such as arithmetic, geometry, grammar, and science; and, on the strength of that distinction, they have committed themselves to rather sweeping propositions regarding the relative educational values of these subjects. The above illustrations are by no means intended to imply acceptance of such a doctrine. Every subject is, of course, a "fact-subject," but every subject is also a "faculty-subject," provided we teach it well, and provided the pupil is ripe for the thinking processes that are involved. We have tried to teach history and geography and literature to children under ten, adopting a lively treatment on the narrative and descriptive level, and avoiding all that is reflective and strictly scientific; and we have largely succeeded. We have also tried to teach arithmetic and grammar to children under ten, *without* avoiding what is strictly scientific; and we have largely failed. We have found out that it is a mistake to begin formal grammar so early, and many of us are beginning to suspect that it is a mistake to begin formal arithmetic so early. We can cause a pupil, by our questions, to think about —to compare and to contrast—the facts brought before him, whether the subject be history or geography or arithmetic, but not, as a rule, when he is only eight or nine years of age. Instead of distinguishing between "fact-subjects" and "faculty-subjects," we ought to distinguish between teaching which does, and teaching which does not, involve on the pupil's part a real effort of thought; and this is an affair of treatment rather than of subject. The second kind of questioning illustrated above is usually enjoyed by a boy of eleven or twelve, but not by young children.

Every good teacher occasionally employs what is called Socratic questioning, *i.e.,* he sometimes frames his questions with the view of showing up the pupil's ignorance or carelessness, and in so doing he is often able to give a valuable bit of intellectual training.

The following colloquy between Jones and his teacher will serve as an illustration:—

Teacher. Jones, can you define parallel straight lines?

Jones (*promptly*). Yes, sir. Straight lines which do not meet.

T. (*meditatively*). Ah! Straight lines which do not meet. (Draws on the board two obviously non-parallel lines not produced far enough to meet.) Then I suppose these lines are parallel?

J. (*taken aback*). No, sir.

T. But they certainly do not meet.

J. (*rather hurt*). No, sir; but—well, of course, I meant to say even if they are produced ever so far.

T. Well, is that far enough? (Produces the lines as far as the edge of the board, but in the divergent direction.)

J. (*somewhat flustered*). No; but they would meet if you produced them the other way.

T. I did what you told me. You really meant, even if they are produced ever so far——?

J. (*relieved*). Both ways.

T. Quite so. How, then, do you define parallel lines?

J. (*triumphantly*). Lines which never meet, even if produced ever so far both ways.

T. H'm. Now suppose these two pencils to represent lines. (Holds them one over the other in different planes.) Would they ever meet, even if produced ever so far both ways?

J. (*suspicious of further trouble*). N—no, sir.

T. Then I suppose they must be parallel?

J. (*humbly*). No, sir.

T. What, then, is wrong with your definition?

J. (*dismally*). Indeed, I don't know, sir.

Socrates would probably have been content at this point to leave the abashed Jones to his own thoughts—sadder, and, it is to be hoped, wiser, but with no more positive knowledge than before. The school teacher's purpose would not, however, be quite realised. Continuing the conversation, he asks Jones to hold the two pencils in the parallel position. Jones, who knows parallels quite well when he sees them, brightens up, and obeys with alacrity. After some further questioning, the boy suggests, or intelligently acquiesces in the suggestion, that the lines must be in the same plane, and he amends his definition accordingly.

Jones has been taken as an example of the careless, slapdash sort of pupil. If Jones should happen to add conceit to carelessness, the occasional employment of the Socratic method may help to cure him of both infirmities.

Most of the books on teaching contain an array of rules regarding oral questioning, some of which certainly savour of pedantry. You are told, for instance, to avoid questions that admit of being

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answered by a simple "yes" or "no," because they encourage guess-work. Sometimes they do but not always, as seems sufficiently obvious from the above dialogue. A teacher ought not to need mechanical rules in order to reduce guessing to small proportions. When, however, a teacher asks a series of questions which require bare monosyllabic assent, his questioning is altogether spurious. He might as well put the questions in the form of statements, because they ensure no effort of thought or of memory.

Again, you are sometimes enjoined to avoid elliptical questions, *i.e.*, questions which take the form of requiring the pupil to complete an unfinished statement. This is another piece of pedantry. Elliptical questions are often a convenient mode of teaching, especially when a lesson is being rapidly revised. The only warning necessary is that such questions shall not become so numerous that their use amounts to an awkward mannerism.

Lastly, you are sometimes advised to insist upon answers in complete sentences. If this rule were followed implicitly, parts of the above dialogues would have to be revised in this kind of way:—

Q. What great city did the English wish to take?
A. (The English wished to take) Orleans.
Q. Who saved the city?
A. Joan of Arc (saved the city).

It is easy to see that this practice might become an intolerable nuisance, because it interferes with the naturalness of the conversation. Answering in whole sentences has been recommended on the ground that speaking in sentences, rather than in scraps of sentences, gives the scholars better practice in oral composition. This aim is to be commended, but we should try to realise it in quite a different way. In the history dialogue given above (from entire approval of which we carefully guarded ourselves) the children do not get the best kind of practice in oral composition—which, by the way, is the same as saying that they do not revise their history lesson in the best kind of way. They make detached statements, but the *sequence* of those statements (a most important element in composition) is left entirely to the questioner, *i.e.*, to the teacher. Instead of this, one or two of the scholars should give a continuous *résumé* of the lesson. The others would be on the look-out for omissions and blunders, and the teacher's questions would aim only at keeping the speaker on the right track. In this kind of lesson too many questions spoil the teaching.

Accurate recall, clear thought, and adequate expression—these, and nothing less than these, should be the teacher's aim whenever he questions his class.

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THE USE OF ORAL COMPOSITION IN JUNIOR CLASSES.

By NORMAN L. FRAZER, B.A.
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THERE is no need here to dish up once more the trite reflection that language is primarily the spoken word and that the art of literary expression has been too exclusively claimed for the written letter. The only concern of the present paper is to maintain that sound reason points to oral composition as the most fitting preparation for lucid, agreeable writing, and to suggest suitable methods to those who are disposed to recognise the reasonableness of this proposition.

Language teaching is one and indivisible; the words recall a certain parrot—but parrot-calls are often truisms. In teaching a foreign tongue, teachers have long since agreed that oral work must precede written; the best of them, we are convinced, recognise that the only foundation for written composition is to be found in very careful oral exercises. But in teaching the foreign and the native tongue differences of degree, and to some extent differences of method, are necessarily occasioned by the contrast of an extremely limited and a comparatively large vocabulary, by the total ignorance and the too great knowledge of colloquialisms, and by the slowly acquired and the intuitively possessed acquaintance with idiom.

At first sight it might seem that the possession of such a birthright as one's own tongue rendered the laborious acquirement of its literary use a ludicrous waste of time—only to be compared with some of those extremer devices of some of the newer mathematicians who are accused of taking infinite pains to teach a boy of ten what he will do unconsciously at the age of twelve. But it may be postulated that literary expression is one of the most delicate instruments of the human mind, and that success in its attainment is so rare that the "intuitive" argument must be ruled out of court. Secondary schools now, like everything else, are based upon the widest democratic basis; and, however excellent may be the general result, the teaching of English has certainly not been made easier. For schools but follow the broad tendencies of the people, and it would not appear that there is any sign among us of a care for the higher claims of language. It is, of course, obvious that it is no part of the schools to foster a preciosity of style, but in a country where there is neither a native genius for expression as in France, nor a kind of exotic cultivation as in Scotland, it is essential to devise some means whereby a satisfactory standard may be attained.

The doctrine of interest, at any rate, is on the side of oral composition. The living word almost compels treatment of the known and of the concrete. And it is here that the teacher of English has a great advantage over his colleague who teaches foreign languages. In the last resort and in the very earliest stages the everyday experience of the pupil presents an inexhaustible supply for

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lessons in composition. The most trivial commonplaces of life may be presented badly and well. But, it is objected, the formal treatment of the commonplace is essentially artificial. To us, yes; to our pupils, no. Besides, even in the teaching of composition there is a law of development, just as in experience. The summer holidays may afford an excellent literary exercise for the boy of nine, but his brother of thirteen may be better occupied in describing Hereward's resistance in the fens; and they may each be taught to tutor the first impulsiveness of their ideas by means of oral expression. For this is one of the first and greatest difficulties with which we have to contend, that on paper there seems no need to present ideas in a cogent and logical order. But the native instinct of the young narrator is to tell—not write—his story so that the whole is effective, and to that end he must keep his incidents well in hand; he must think, and picture to himself the cogent sequence of things. But even then a graphic story is not necessarily correctly expressed? Bill Adams could tell a graphic story with the best, but he is hardly a model of literary expression. That is true, but had Bill been young and had a form of class-mates hanging on his immortal imaginings and a teacher hard by, sympathetic but watchful, many of his solecisms could have hardly passed unchallenged.

But to return to the class-room. It must be supposed for the purposes of this paper that we have no concern with the very young; we must assume that we are dealing with pupils who have passed through the kindergarten or some equivalent training, and that any methods adopted must be suitable to the lower forms of a normal secondary school. Our immediate object is to find a proper introduction to the difficulties of written composition. This introduction must not be haphazard, but above all things systematic; and although composition should be incidental in so far as it must be kept in view in every department of the curriculum, yet its form and its end must be formal. For the art of composition is not a string of technicalities to be carefully disguised from those who aspire to its practice; grammar or the science of language is in a very different case. Vocabulary and expression may be cultivated better by example than precept. As steps to the supreme end we have to foster a largely increased stock of words, variety, ampler sentences, lucidity, and cogency. The choice of our themes must, as far as possible, be regulated by these requirements; and for this some higher ideal should be sought than familiar surroundings. The furniture of a class-room will never inspire a noble vocabulary, for it cannot inspire a noble thought. We must have something to stir the imagination, a story in fact; but the story must have been visualised by those who are to tell it; they must have had it made interesting to them first. The history lesson, the reading lesson, or the study of a fine picture will provide more than ample material.

But a good deal of work must be done before the content of the boy's mind can be reduced to the necessary proportion of composition. Inessentials must go, outstanding features must be brought into relief, the less appropriate words must give place to the more, the description must be introduced satisfactorily and it must end reasonably. By what means is this to be done? First of all there must be exhaustive questioning on the subject, and then, after the mind has sifted the chaff from the grain, a brief plan must be drawn up—not by the teacher, but by the class. So a double object will be gained; each individual will have shared in the work, and the mere act of summarising is itself a useful exercise. But it is now that the real difficulties begin—the training in word-building and in sentence-building; for we must be ever on our guard against obscuring the building for the scaffolding at the same time as we ensure proper foundations and symmetrical design. Luckily, however, the ground-plan and the elevation are easily kept distinct, and much excellent language work can be done without impairing the literary result. Even the mechanical formalism required in explaining the use of such important details as the proper employment and meaning of suffixes and prefixes can appear on the blackboard side by side with the finished product of which they seem to be an infinitesimal part.

But far more difficult than the training in word-building is the training in sentence-building. The unrestrained genius of the young composer lends itself to stringing together principal co-ordinated sentences. And however fascinating may be the exercise and practice of subordination, it is certainly not easy to teach. And yet what else can it be but fascinating to the pupil to watch his own creation gradually assume a beauty of form dependent on so subtle a process as the logical necessities of time, reason, and consequence? There is always, too, the advantage that the desired end is being brought about by the quick wits of a score of fellow-workers keenly interested in the result. But even when some sort of sequence has been acquired there remain the delicate questions of felicity of phrase and variety of construction. The matter of paragraphing has already been broadly settled by the plan drawn up on the blackboard.

The mention of the paragraph leads to the further point as to how the fair result is to be presented to the pupils. Obviously it is undesirable that all the rejected strivings after perfection should stand recorded on the blackboard, but it is almost equally undesirable to wait till the whole narrative has been worked out. To accept the paragraph—not the sentence—as the unit of composition would seem the happiest solution, for it affords unity of thought and manageable content. When paragraph has been added to paragraph and the work stands as a complete whole, there is every reason why the model should be transcribed. The work has been the pupils' work and each of them has a claim to regard it as his own.

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In oral composition, as in most parts of the teacher's work, there are, of course, mechanical devices with which all of us are familiar. There is one which has enjoyed considerable favour in the past, and which, discarded from other branches of language teaching, still obtains in English. It is a common practice to require pupils to correct faulty sentences. What useful end is gained by this—at any rate in the early stages of teaching composition—it is extremely hard to say. As an advanced exercise in syntactical niceties, no doubt a case can be made out for this practice; but there it is an adjunct to the science of linguistic criticism—a stage of development far removed from that we are here considering.

From what has been said it appears that the advantages of oral composition include the co-operation of the class, both positively by help given and negatively by suggested criticism; the presence of the teacher as an arbiter of fact and judgment; the elimination of recorded error; the necessity of a choice of vocabulary; and a training in conciseness of thought. The greatest advantage of all, perhaps, is that it is possible for the teacher to secure that the general reading of the pupils should react directly upon their composition by recalling a word, a phrase, a construction, an idea embedded in a setting which has become part of their experience and now exalted into a standard of comparison and a criterion of taste.

But even the most enthusiastic believer in the advantages of oral composition has to recognise its limitations. Those limitations are shrewdly hinted at in the title of this paper. Oral composition is invaluable as an introduction to written composition, but there comes a stage when the thought of the individual is not to be trammelled by the co-operation of the many, when abstraction must supersede the concrete, when common treatment would lead either to artificial rhetoric or dead conventionality. There are, of course, those who hold that the preparatory training of oral composition leads naturally and properly to the officially-recognised formal debate. But while it is no part of my business to discuss here the merits of debate as an aid to the class-teaching of composition, I may permit myself to express the opinion that the highest forms of literary composition are essentially different from the nature of debating, and that little advantage is likely to accrue to either the one or the other from the installation of the latter in the class-room.

Nor must it be forgotten that oral composition will be far more effectual if continually practised side by side with written. The preliminary talk and the plan may often serve as a preparation for a written theme, without first obtaining an oral model. Sometimes it will be most helpful to work out the model orally after a written exercise upon the same theme and the same plan. The simple drawing up of the plan after the preliminary talk will in the earlier stages produce amazing varieties. The discreet oral analysis of an individual's written work will lend variety to method.

Finally, it may be of use to name one or two books likely to prove useful to teachers who desire to try for themselves the methods, or rather the broad system, suggested in this paper. For preparatory or very young secondary-school pupils may be recommended Miss Hyde's "Lessons in the Use of English" (Heath) and Miss Kumpster's "English Composition," pt. i. (Norland Press). For middle forms, Gardiner, Kettredge, and Arnold's "Elements of English Composition" will be found useful and suggestive.

SUGGESTIONS FOR A FIRST COURSE OF GEOGRAPHY.

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I REMEMBER once reading that in a certain Parisian studio the students were wont to divide mankind into two classes: "les gens intelligents—et puis les autres." The former have by this time, I presume, decided what they mean by geography, and with the others I am not here concerned, so that I need not begin this article by defining geography, a task which would indeed be quite beyond my powers. I will, however, quote the following remark of Lieut.-General Strachey, with which I entirely agree:—"I would say generally . . . that there is no subject larger in its scope than geography. It comes into contact with not only every branch of science, but with every portion of history. . . . The fact is that the human race essentially depends upon the earth, on which it has been developed under the influence of its surface and the climate, and . . . the physical features of the different countries of the earth have had most prominent and important effects on all that has happened in the past"—and one might add on all that is happening in the present.

In what follows I am supposing that the children have two geography lessons a week, and one of these, I think, could be usefully given to mapping out their own surroundings. The first thing they have to do is to locate themselves, by observing the position of the sun, and thus getting the four points of the compass, north, east, south, west. They should spend a long time over this, and make various observations, and work numerous exercises in connection with their observations, and in all their outdoor work they should begin by fixing their directions. They should also be encouraged to observe the position of the Pole Star, but they should not be allowed to use the mariner's compass until later in the course. No child should have any geography book nor an atlas, but each should have a fair-size mapping book, ruled with squares on one side and left blank on the other. They should begin by making a plan of the schoolroom to scale, then of a street (if possible of one facing due N. and S. or E. and W.), next of a street with turnings, until they have mapped out as much as is convenient of their own neighbour-

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hood. On the blank pages the children should be encouraged to paste pictures or to make drawings of the places represented in the maps on the opposite pages. After they have had sufficient practice in this, each child should have a six-inch ordnance map of the streets near the school, and compare it with her own map, and then go over the ground again with the ordnance map; finally they should each have a one-inch ordnance map of the neighbourhood of the school and study it carefully, observing the public buildings, tramway lines, omnibus routes, open spaces, the kinds of trees, flowers, shrubs, and so on, and all the while they should on their blank pages as often as possible paste in pictures or drawings of the places and things they observe. This should lead them later on to make more extended observations (for instance, the different kinds of flowers and trees which grow on different soils), and when they go for holidays they should be encouraged to use ordnance maps and keep a record of their observations.

When they have had practice in all this they should go over the ground again and notice the difference in levels, and gradually be led to an understanding of the simplest contour lines. The teacher might adopt some such plan as that recommended in the syllabus drawn up for the council of the Royal Geographical Society, and published in 1903, or if the subject is considered too difficult for this stage it could be deferred, but at any rate the children should notice the difference in levels, even if they do not mark it on their maps. They might now, perhaps, be shown a relief map of their district (if one can be obtained), and taught to compare it with their ordnance maps.

Nothing has been said so far of rivers or streams. These always present difficulties, as the most unimpressive streamlet has an inconvenient habit of putting quite a long distance between its source and its mouth. However, if there is any kind of stream in the neighbourhood, the children should be taken as far *up* it and *down* it as possible, and made to observe the direction in which it flows, and afterwards they should follow its course on their ordnance maps, so that they should once for all grasp the fact that water flows from a higher to a lower level. At this stage, perhaps, some simple experimental lessons and exercises might be given in answer to the question: "Where does the water come from?" and these would lead to experimental lessons in physiography in general.

I have supposed that the children have two geography lessons a week; they will also probably have two history and two oral composition lessons, and I would suggest that these, as well as the one remaining geography lesson, be used for what follows. The composition lessons could be used for getting back orally from the children the stories and descriptions which had been given them in their history and geography lessons.

Side by side with the mapping of their own neighbourhood they should learn how other people long ago mapped out their surroundings, and how at length, in spite of many mistakes and failures, the whole world has to some extent been mapped out. The children should still have no books, but they should use their mapping books for making drawings and pasting in pictures. "The earliest known map is one representing the Plain of Mesopotamia with the Euphrates flowing through it, and the whole surrounded with two concentric circles which are named the 'Briny Waters.'" I should then begin with Mesopotamia. I should describe its direction with regard to the school, its climate and physical features, and its people, and when the children had a picture of all this in their minds I should tell them that the Babylonians had no accurate maps. I should then show them a copy of the ancient map of Mesopotamia, and say this was the map they made of their country, and then I should let them copy it into their mapping books. Next I should tell them the story of Abraham and his journey from Chaldea into Egypt, describing Egypt and the countries through which he travelled. Then the story of Joseph, and the departure of the Israelites.

The next people to come upon the scene are the Phœnicians. I should describe their country, the building of their first boat, their voyages, their colonies, their visit to Britain. But they were traders, and they made no maps, or if they did they have not been preserved. Next come the Greeks, with their sunny climate, their mountainous land, their blue island-dotted sea. I should try to make the children picture the country and climate and people, and contrast it with Egypt, and then I should tell them the story of the Argonauts, the Siege of Troy, the adventures of Ulysses, and then I should show them Homer's map—the flat shield with Oceanus surrounding it—and I should tell them this was what the early Greeks thought the world was like, and I should let them copy the map into their mapping books. Then I should tell them the chief facts in Greek history and Roman history, connecting the history and geography together whenever the one depended on the other, but just telling the simply human story when geographical influences were absent.

The foundation of the Greek colonies increased the geographical knowledge of the Greeks, and the children should be made to see how this increased knowledge led to a desire to make a map and write a geography. Aniximander of Miletus (sixth century) was the first to do this. With regard to his difficulties (the difficulty of finding the *relative* position of places, and so on), the children should be told just as much as they can understand, but at least they should be made to feel that he *had* difficulties. And so they should go on to the time of Eratosthenes (240 B.C.). By his time scientific men had come to the conclusion that the earth was a globe, fixed in space at the centre of the universe. At this point the teacher should have a large blank globe, and should mark on it roughly the prin-

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cipal places she has told the children about in the position the discoverers supposed them to be. Thus Eratosthenes calculated "that from the Straits of Gibraltar to the East of India was two-thirds of the earth's surface, and remarked that if it were not that the vast extent of the Atlantic Sea rendered it impossible, one might almost sail from the coast of Spain to the coast of India along the same parallel." The children should each measure the distance on the teacher's globe and share Eratosthenes' feelings on the subject. Thus they should go on to the time of Ptolemy of Alexandria (150 A.D.), and Ptolemy's ideas should be explained to them. The teacher's globe should now be a copy of Ptolemy's globe with the principal places marked on it.

Then come the Dark Ages when all this geographical knowledge was lost, and men believed the world was flat, enclosed in a circle, with Jerusalem in the centre, and Paradise at the top or extreme east. This is shown in the Hereford map, which the children should try to copy.

The difficulty for travellers at this time, as well as for the ancients, was that in all their voyages they had to keep close to the shore. They had the sun by day to guide them and the Pole Star by night, but if neither of these was visible they had no guide, and hence they could not venture far out on an unknown sea. But in the beginning of the fourteenth century the mariner's compass began to be used, and henceforth men became bolder, and ventured farther out to sea. The children should now be shown a magnetised needle, and allowed to experiment with it and to discover that however they move it about it always returns to its first position and points N., and then they should be told the story of Dante's tutor, who, on a visit to Roger Bacon in 1258, had been shown a mariner's compass, but had remarked "that no mariner would dare to use it lest he should be thought to be a magician." Henceforth the children should use a compass in their own out-of-door work.

Then come the journeys of the Polos (1295), and an account of these should be given with a description of the places mentioned. The story of Marco Polo's life should be given, his homecoming and imprisonment, and the banquet scene described. The whole reads like a fairy-story.

Next comes the rise and decline of Venice. The children should have brought home to them the fact that "mediæval Europe depended entirely on the East for its luxuries and for many of the necessaries of life." They should be shown, for instance, silk and calico and muslin and emeralds and rubies and topazes, and nutmegs, cinnamon, pepper, cloves, frankincense, musk, ginger, camphor, myrrh, saffron, indigo, dates, and various other similar commodities, and they should be made to realise the necessity for the spices in seasoning the salt meat of winter and the salt fish of Lent, and of the scents for counteracting the bad odours of the time. Then a description of the countries which produce these things should be given, and finally the globe should be brought out and these countries shown on it, and the children should find out for themselves the only possible routes by which these very desirable commodities could be brought to Europe. Thus they would see that Alexandria would become the centre of this trade, and that as the Italians had the shortest sea route from Alexandria to Europe the European part of this trade fell into their hands. All this should be learnt by the children very slowly in the course of many lessons and with the help of stories and pictures.

In a similar manner they should learn of the voyages of the Portuguese along the west coast of Africa from the time of Henry the Navigator to the time of Bartholomew Diaz. The erroneous outline of the Roman geographers should be marked on the globe and rubbed out as voyage after voyage demonstrated its inaccuracy. The children, too, should be told that in one of the voyages the sailors brought home what they considered a wonderful story—viz., that they had lost sight of the Pole Star, and had seen instead the Southern Cross. (The children should be shown a picture of this.)

Next should come the story of the invention of printing and the story of the taking of Constantinople by the Turks. As a result of this, Ptolemy's geography was printed at Rome in 1462, and with maps in 1468. Then comes the story of Columbus, and the children should see how Ptolemy's mistaken notions induced Columbus to imagine the journey eastward to India to be much shorter than it really was; then the landing on Watling Island under the impression that it was the mysterious land of Zipanfu or Japan. Then comes the story of Vasco de Gama's voyage round the Cape of Good Hope to Calicut, and its effect on the Venetians and the Sultan of Egypt, who saw their trade ruined. "When this news reached Venice the whole city felt it greatly and remained stupefied, and the wisest held it as the worst news that had ever arrived." Then come the further voyages of the Portuguese, until by 1521 they had possession of the Spice Islands and the monopoly of the trade in their hands. Finally the voyages of Magellan and Amerigo Vespucci.

The children should now have the outlines of the countries as far as they have been discovered accurately drawn on the globe, and they should now be allowed to use the maps in their atlases.

In a short article of this kind it is impossible to do more than indicate very briefly and imperfectly the course of events, but my idea has been to let the children follow the path of the discoverers, until the fifteenth and sixteenth centuries, incidentally learning the main facts of history, in the belief that if some such plan were followed the children would quite early in their career have grasped two important facts—viz., that the earth is a globe, and that this has had important effects on the history of mankind; and secondly that maps are not meaningless diagrams filled with hard names, but that they

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represent the work of generations of brave men who faced dangers unflinchingly, endured toil willingly, and met death with calmness.

Books for the teacher's use:—"The Story of the World," by M. B. Synge; "The Story of Geographical Discovery," by Joseph Jacobs; "A Physical, Political, and Descriptive Geography," by Keith Johnston; Reclus' "Géographie Universelle"; "An Introduction to Practical Geography," by A. T. Simmons and Hugh Richardson.

THE FORMATION AND USE OF SCHOOL GARDENS.

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GARDENING, when carried on with a definite educational purpose, becomes a really important item in the school curriculum. It is to be hoped that it will develop and encourage a love of gardening for its own sake, and thus provide boys and girls with one of the most delightful of hobbies; but it should do much more than this. It necessitates a certain amount of manual skill and handicraft; it affords a valuable artistic training in the grouping of flowers to children who may have but little talent for drawing and painting; it gives an opportunity for real scientific work in the carrying out of definite experiments on pollination, the relative values of soils, and the like; and here nature-study may be carried on in a natural way, for the young gardener is compelled to study weather and the seasons, the interdependence of animal and vegetable life, and to learn to discriminate between friend and foe in the garden. Moreover, without any didactic effort on the teacher's part, the child learns moral lessons of the utmost value in the inevitable sequence of cause and effect. In gardening, any neglect or carelessness has generally to be paid for at once, and very heavily, since Nature gives no second chances.

The scope afforded to the teacher must necessarily largely depend upon (i) the area of ground available, (ii) whether gardening is a recognised subject in the curriculum, and is carried on at definite times under his supervision, or whether it is a voluntary pursuit which he can influence only indirectly and at odd times.

At the worst, the school gardens are little plots in a narrow border along one side of a gravel playground—but even these are not to be despised—while under more favourable conditions the plots are as large as the young gardener can thoroughly well manage, and there are, moreover, beds other than the individual plots. It is a great advantage in every way if there are large beds elsewhere in the school grounds, as these afford an opportunity for grouping on a wider scale, and the possibility of real artistic effects difficult to achieve in the small plot. Here, too, the children can learn somewhat of the arrangement and forethought necessary to ensure a really successful and continuously flowering herbaceous border. Where the gardening is under supervision it has been found a good plan to make different forms responsible for the various big beds and borders, and perhaps to award a prize annually to the form whose bed has been most frequently adjudged the best in the monthly inspection.

If the grounds of the school are extensive, and there is any choice of site for the small plots, it is worth while to call in expert opinion on such an all-important matter. More frequently, however, the science master has no choice, and is merely given the chance of a small area in the school playground of which to make the best educational use that he can.

Where space permits, it is most desirable that there should be about seventeen small plots for natural order beds—Ranunculaceæ, Cruciferæ, Caryophyllaceæ, Leguminosæ, Rosaceæ, Umbelliferæ, Compositæ, Primulaceæ, Boraginaceæ, Scrophulariaceæ, Labiatæ, Caprifoliaceæ, Salicineæ, Liliaceæ, Iridaceæ, Gramineæ—should all be represented.

If there is a shady corner in the playground, that may be used for ferns, and some suitable habitat for marshy plants is necessary. If it is impossible to get a concrete-lined tank, it will be found that a zinc bath sunk in the soil answers the purpose fairly well. There is often some little difficulty in imitating natural conditions successfully, but this may often be overcome. For instance, a bucketful of lime dug into a corner of the required plot will ameliorate the conditions to which the transplanted chalk flora has to accommodate itself.

Every field club ramble should result in a number of roots of common wild plants for these beds, and in the holidays, when the school is scattered far and wide, plants unknown in the school district may be collected and brought back in damp moss for planting. Perhaps it is hardly necessary to add here that the uprooting of *rare* wild flowers should be sternly prohibited, and that it should be agreed that those rare plants which cannot be grown from seeds or cuttings shall not find a place in the natural order beds. Two or three individuals should be responsible for the care of each bed. If so much space really cannot be secured, then something may still be done with a single plot, in which two or three typical representatives of the different orders may be grown. This "wild-flower garden" will afford valuable material for the botany lessons, as the flowers themselves, the dispersal of seeds, and so on, may be studied on it.

The next consideration for the teacher is the amount of space to be given up to experimental plots, as it is here that the most valuable scientific training in connection with the school gardens will be done. Definite sets of experiments can be carried out to investigate some such problems as the following:—

I. The value of different soils and manures.[1]

[1] For valuable suggestions, see "Nature-Teaching," by Watts and Freeman. (John Murray.)

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II. The pollination of wind and insect-fertilised and cleistogamous flowers.

III. Simple experiments in variation.

IV. Investigation of the climbing organs of different plants.

V. Growth which results in "stopped" and "non-stopped" plants.

VI. Effects of sowing seeds at different depths, and of thinning out and leaving the seedlings untouched.

VII. Effect of growing the same crop continuously without manuring the ground.

VIII. Some study of plant diseases.[1]

These bare suggestions might be amplified to any extent did space permit, but the intelligent teacher will realise that the great object of the experimental plots is to make a pupil determined to investigate some problem which is the outcome of his own observation, and not at all that the teacher shall propound random conundrums to which he is obliged to manufacture an answer from time to time.

Much interest may also be aroused if a small plot of ground, carefully cleaned and raked over, be left for a year in order that the spontaneous growth of weeds may be studied, and faithfully recorded in the garden log-book.

It is often convenient to have a plot in which may be given demonstrations of ordinary gardening operations such as grafting, budding, layering, pruning, good and bad methods of sowing seeds, watering, syringing, &c.

One or more compost-heaps should be kept in some out-of-the-way corner, if possible, where grass cut from the lawns, dead leaves, and twigs, and stable manure may be allowed to decay. The heaps should be kept damp, and may be covered over with soil to prevent disagreeable smells. The improvement in the results obtained when this material is used in the garden will readily convince the children of the necessity for vegetable matter in the soil.

The important matter left for consideration is the small plot. There should be one for each child if this is at all possible; if not, two or three must share a garden, though this plan has many obvious disadvantages. The plots should not be less than six feet by three feet, and each should be securely divided off by some inconspicuous earth-coloured tiles, as these may be buried to such a depth that they can hardly be displaced. Paths a foot wide should be left between the plots, and they may be covered with cinders if tiling is too expensive.

The question of a sufficiently good soil is almost always a problem, and here the teacher who is keen that his pupils shall have a fair chance will make every effort to secure a tolerable depth of mould. Bricks cannot be made without straw, and two or three inches of soil laid down on a substratum of rubbish is a very depressing medium for the young gardener to work in. Whatever funds there are had better be sacrificed at first to ensure a depth of from one and a half to two feet of soil, and every plot should be thoroughly well dug over and manured by a man before being handed over to the children.

The garden tools are another highly important consideration, and here it is the truest economy to buy small sizes of the proper makes, and on no account to be tempted by inviting-looking, but generally worthless, sets of tools for children's or ladies' use. The necessary tools are trowel, handfork, small hoe (*i.e.*, onion hoe), Dutch hoe, rake, spade, digging-fork, watering-can (of zinc, *not* tin), syringe, and basket for rubbish. The first mentioned on the list are those of which the greatest number are required.

Probably the cheapest arrangement for a tool-shed is to adapt a portable bicycle or poultry house,[1] but a packing-case made waterproof with tarred felting and padlocked answers the purpose.

In the management of school gardens nothing is of more vital importance than regulations sufficiently stringent to ensure that every tool taken out shall be returned to its proper place by the person who took it out, and returned *clean*.

The amount of help which the teacher gives must be largely decided by circumstance, but in any case the young gardener should have a great deal of freedom in the choice, arrangement, and treatment of his plants, and must necessarily buy much of his experience through failure.

It is of the greatest importance, however, that every boy or girl should have some definite scheme in mind for the year's gardening. In the winter months, when little can be done out of doors, children should be encouraged to browse on the best florists' catalogues, to handle good illustrations of garden plants, and views of beautiful gardens, as by this means ambition is fired, and they soon have the desire to grow a great variety of plants. Each child should draw up an outline sketch of the work he proposes to do each month (*e.g.*, the bulbs to be planted in October, the seedlings that should be ready for planting out in May, &c.). Also, the young gardener should add to his scheme a list of the flowers he expects to have in bloom every month. This plan prevents that haphazard kind of gardening in which the child buys a red daisy root one day because he sees them displayed cheap on a coster's barrow, and a fern the next week for no better reason. It is not intended that the scheme should be rigidly adhered to if an improvement suggests itself, but it is highly desirable that the gardening shall not depend on the whim of the moment.

Every child should keep a garden diary, and should enter faithful records of the dates when seeds were sown, bulbs planted, and cuttings made, when each plant came into bloom, the length of the flowering period, &c. This kind of systematic record induces orderliness and accuracy, and is useful for reference.

[1] See the publications issued by the Board of Agriculture.

[1] For this and other valuable suggestions I am indebted to Miss M. Agar, formerly Gardening Mistress at Wycombe Abbey School.

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Moreover, carefully-balanced accounts should be kept by every child of the money spent on the garden throughout the whole year, and at the end of the summer term all these accounts should be discussed and criticised by the teacher and the garden club together, with the view of achieving the best results with the least possible expenditure of money.

Whether gardening is taught as a school subject or not, the teacher will probably find it a good plan to inspect the gardens once a month, and criticise the appearance of the plants, number of plants in bloom, cleanliness of the soil, and general tidiness of the plot. If a garden prize be awarded annually, marks may be given after each inspection, and the prize may be given on these, or the prize may go to the child whose garden is the best at the time of judging, provided that it has never fallen below a certain percentage throughout the year.

Where the plots are very small and the conditions generally unfavourable, the teacher will naturally find it hard work to awaken and keep alive much enthusiasm, and the tiny plots may show a great sameness. Then it may be suggested that individual children should grow flowers of one colour only, by way of change, that there should be blue or yellow gardens, for instance; or that they should agree not to grow any of the same plants as in the former year (with the exception of established perennials), or climbing plants only—anything, in fact, to prevent the gardening from becoming dull and monotonous.

It will probably be found that an annual flower show will produce a good deal of keenness, and plants can be grown from seed in the class-room, in window-boxes, or at home, even by those children who do not own a school garden. Seedling oak, beech, orange, date, cherry, and other trees form interesting exhibits, and may be shown year after year with the record of growth in each year.

Another useful stimulus is the circulation of some trustworthy gardening magazine, and the children should be taken to visit big gardens as often as possible. Near London this is a simple matter, as expeditions to Kew, the Botanical Gardens, Hampton Court, and others are easily arranged, but in some provincial towns these visits are more difficult to manage. As a rule, however, the owners of beautiful private gardens in a neighbourhood readily grant permission to a small school-party, under proper supervision, to go over the grounds.

The educational value of the school garden in providing material for nature-study lessons cannot be overrated, but can merely be glanced at here. Where the lessons have to be given in the class-room it is by no means easy to keep the seasonal aspect sufficiently prominent, or to make the children feel the interdependence of plant and animal life; but where there is a school garden into which the class can be taken, the skilful teacher will connect the work of the earthworm, for instance, and that of insect visitors to the flowers in a vital way with the study of plant-life. Then, again, weather records become of practical utility to the young gardener, when so many operations must entirely depend on weather conditions; friends and foes among the birds and the common insect-pests force themselves on his notice; while frogs and toads, slugs, wood-lice, beetles, ants, and spiders and their webs are all to be found and studied under natural conditions.

In conclusion, I can only urge the teacher who looks round his gravel playground in a town atmosphere with considerable misgivings as to whether gardening under such conditions can have any educational value, to try the experiment—he will probably be surprised at the results achieved by the children.

THE TEACHING OF VULGAR FRACTIONS.

By L. W. Wilsden, M.A.

I.

IT is long now since I began to learn vulgar fractions, yet the time is still firmly fixed in my mind as one of those points that marked a branching of the ways in my arithmetical progress. As a result of my thoughts on the subject then, and now, the present paper on the teaching of vulgar fractions has been written.

I may speak treason in saying so, but it seems to me that, so far as the four simple rules go, not much permanent harm is done by indifferent teaching. That is to say, boys may learn these rules in a purely mechanical way without injury, so long as they are given plenty of opportunity of applying them in the solution of the problems that naturally arise in the course of everyday life. It might be better for them to learn in a kindergarten to sort their sticks into bundles of ten, and to talk of one or more "tens," and so to become gradually familiarised with the principles of the decimal notation. But practically, in spite of all that has been said and written on the subject, the majority of boys who come to a preparatory school have not previously been taught by people with any considerable grip of principles, and so, as a matter of fact, have generally learnt what they have learnt rather unintelligently; and yet, as I say, I question whether such unintelligent learning of the four simple rules much matters, so long as the rules are intelligently applied to the solution of actual problems, and the mere mechanical working with figures is not held up as an end in itself.

But, by whatever ways they may travel through the first stages, all learners stand together again when they near the land of fractions, and there the road forks more decidedly than ever before, and the sign-post that marks the parting points with one arm towards Figures and Fog, with the other to Facts and Understanding.

Even the most perfunctory of teachers begin

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their first lesson on fractions by cutting a piece of paper into segments, or by doing some kind of chalk demonstration on the blackboard; but this initial dallying with the concrete is often also the last, and after this first lesson actual fractions are entirely replaced by symbols, and the real facts are overlaid and smothered by a countless succession of mere arithmetical operations.

Boys will not and cannot learn soundly under teaching of this kind. Such a single demonstration will with them prove quite ineffective. Underlying concrete facts need to be again and again put before them in varying connections of many different kinds before those facts become recognised as the really important basis on which the unimportant superstructure of mere figure work has been erected. A fraction is not, as has often been vainly held, one figure over another with a line between, but an actual fragment broken off from some given concrete whole, which fragment is for the sake of brevity represented on paper by the afore-mentioned figures with the line between. On this one fact are founded all those operations which we perform, using figures as a means to further our ends, to discover the value and results of various combinations of concrete fractions. Unless this fact of the actual concreteness of fractions together with their physical aspects and appearances, when compared with the wholes of which they are parts, or with other fractions, becomes vividly realised, learners will continue to spend or misspend longer or shorter periods of wandering in the misty land we have spoken of above.

The main difficulty, from the teacher's point of view, is that, whereas in taking a very small class of not more than half-a-dozen boys it is possible to do all the concrete demonstration and drawing required, yet once the class attains normal dimensions it is quite out of the question to provide, with any practicable expenditure of energy, a sufficiency of concrete problems for solution, and the teacher is driven to a use of numerical examples to a much greater extent than is desirable. It is because the solution of this difficulty which we offer below seems at once satisfactory and practical that the present paper is being written, for the experience gained by the writer may prove useful and suggestive to others, and may obviate some waste of time both for teachers and taught.

For the purpose of showing visible and actual fractions, we might take a board and, after marking it out into some definite number of equal parts, saw it through at one of the dividing lines; or we might take an actual cake and cut it into a number of equal slices. In this way we could exhibit a certain number of actual fractions of actual things, but such fractions would not be readily available on all occasions, while they would certainly be cumbersome, and possibly inaccurate. We cannot, then, use, except very sparingly, actual things cut into actual parts, and we must therefore fall back on representations of actual things, which, although only representations, will give to the eye an accurate idea of the real things. For teaching purposes these representations must be in sets, so many of a kind, and each one of a kind must be divided into a number of equal parts differing from the numbers into which all the others are divided. Thus, if we have twelve representations of a kind, they may be divided severally into from two to thirteen parts. If in each case some means be taken for visibly marking some given number of parts, each separate shape or representation will show two fractions of the whole, the marked and the unmarked portions. Should the shapes be reversible, each set of twelve will be capable of showing concretely and visibly upwards of forty separate fractions. By employing four sets of shapes the number of demonstrable fractions will be increased to upwards of one hundred and fifty, and this number will fully meet all school requirements. The selection of suitable objects for representation is a matter for individual taste and ingenuity. Here I will only give an account of the four sets that I have myself devised.

1. PLANKS. Take some large sheets of stiff cardboard, and paste upon both sides of each sheet lengths of that species of cheap wall-paper which is designed to imitate match-boarding. When the whole is dry, cut into strips at the joints of the boarding. In this way twelve strips each representing a plank may be formed. Next divide the planks, by thick black ink lines drawn accurately across their surfaces, each into some particular number of equal parts from two to thirteen. Then dilute some ink with water till it is a pale grey, and with this mixture wash over on each plank some exact fraction of the whole, two-fifths, or four-sevenths, or whatever it may be. Each plank should be divided on each side into the same number of parts, and a different fraction should be washed over on each side.

2. BUNS. Cut twelve discs of cardboard each twelve inches across; colour roughly (umber and burnt sienna) to imitate buns. Divide by thick lines drawn in ink from the centre to the circumference into equal parts varying in number from two to thirteen, as before. Wash over a particular fraction of each side of each disc with the grey mixture, but let the fractions be, as far as possible, different from those washed over in the case of the planks; *e.g.*, if the "plank" has one-seventh and two-sevenths darkened, darken three-sevenths and five-sevenths in the case of the "buns."

3. GLASS JUGS. Draw a rectangle, ten by five inches, on a sheet of white cardboard, and on to one side of this draw a simple jug-handle. The whole will adequately represent a glass jug. Cut this jug out, and from it make eleven similar jugs. Divide these transversely into varying numbers of equal parts by ink lines as before, and with the grey wash, applied discreetly, indicate in each case liquid contents rising to some one of the division lines.

4. SLABS OF CHOCOLATE. Cut rectangles of cardboard not less than twelve inches long, in the

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same proportions as a stick of chocolate. Colour with umber, and divide by lines both transverse and vertical into varying numbers of equal parts. Wash over with ink certain fractions of each. The division by lines crossing one another will enable the slabs to be conveniently divided into more divisions than was the case with the planks, the buns, or the jugs; in this way an entirely fresh set of fractions will be given. If there is sufficient skill to make the dividing lines resemble the V-shaped depressions that usually traverse the surface of chocolate slabs, so much the better.

From these four sets of shapes all the problems necessary for a course of lessons on vulgar fractions can easily be provided. The reason for having different sets of shapes is that the essential idea of equal divisions is better enforced when the divisions are not always made in the same way.

The account of our apparatus is now complete; in a second article I shall try to give in a compressed form an outline of the processes by which a knowledge of vulgar fractions may be naturally imparted, together with examples and problems which will show how the shapes described above can be used in practice. This article may, however, be fitly concluded with a brief account of the principles which will be our guide in actual teaching.

We shall endeavour so to advance that we may cultivate and strengthen in the taught an attitude of mind which will lead them to look on a question in arithmetic not as a "sum" to be mechanically worked, but as a problem to be intelligently solved. We shall endeavour to do this by using throughout the processes proper to discovery. We shall not begin by saying, "Now, I am going to teach you fractions," but we will start with some problem in ordinary life which will necessitate the use of fractions. We shall then examine the nature of fractions, and consider the various means of expressing them and dealing with them, leading on naturally from step to step, first in each case showing the necessity or convenience of having means to attain certain ends, and then going on to discover those means. In fact, we shall try to make our lessons a running commentary on the old saw which affirms that necessity is the mother of invention.

SOME IMPRESSIONS OF NORWEGIAN GIRLS' SCHOOLS.

By Winifred A. Todhunter,
Gilchrist Travelling Student.

NORWAY is a poor country—so poor that, in spite of strong patriotic feeling, one-half of her population has been forced to seek better conditions in the New World. A merely cursory glance at the soil will convince the stranger that it needs more than ordinary courage to face agricultural conditions there. It is no uncommon thing to see huge boulders and piles of rock and stone which have been "picked" from the farm land by the hardy Norseman in his fight with Nature. Yet, in spite of her poverty and her climate, Norway has built up for herself an educational system which is one of the finest in the world. Neither the long Norsk winter nor "chill penury" froze the genial current of the soul of such as Nansen, Ibsen, and Grieg, and whether or no genius is "compressed mediocrity," certain it is that travellers agree in their testimony that the general standard of culture in Norway is high. Ask a sixteen-year-old boy or girl your way in the streets of Christiania, speaking German or English, and you will generally get an intelligent answer in the same language. Or get into conversation with a shrewd Toten peasant, and he will show a better understanding of universal history than your English farmer of the elements of his own national history.

There are certain points which are peculiar to the Norwegian educational system. In the first place, children are not obliged to attend school before the age of seven, and so we get "back to Plato." No doubt this is partly due to the severity of the Norwegian winter, and it must be remembered that no Norwegian town is large enough to make street life so undesirable for young children as it is in London or Chicago. But also the traditions of the race insist on strong parental control, coupled with a realisation of parental responsibility, and there is a rooted objection to the kindergarten system among the people. Another peculiarity arises from the intensely democratic feeling of the people. There are literally no classes in Norway, and, though the rich merchant of Christiania is poor according to English standards, yet, on the other hand, there is none of that degrading and brutalising poverty which we see in our own large towns. One result of the democratic outlook is that there is no overlapping in the educational system. In the country and in the smaller towns there is only one school, which poor and rich attend. Even where there are higher class private schools, as in Christiania, the preparatory classes attached are on exactly the same lines as in the elementary schools, so that up to the age of twelve every child has had the same elementary education, and it is on this basis that further instruction is given.

In the country girls and boys are educated together, both taking four hours a week gymnastics and manual work. The upper standards of the elementary school form a secondary school, rather approximating to our new county schools than to the German Mittelschule or higher grade school, and in some cases corresponding to the French lycée or our high school. In Christiania there are three great co-education schools (Cathedrale School, Borger og Realskole, public; and Fru Nielsen's, private); but in general the boys and girls are taught separately. As a rule, the Christiania girl spends the first four years of school life at one of the magnificent primary schools of the town. The buildings are very fine. That in Lakkegaden, *e.g.*, is a far more sumptuous building than the royal palace, lavishly

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fitted with everything necessary, including a doctor's room, and bathing and dining saloons. No seats in the playgrounds are allowed, and we remarked an electric clock which automatically rings bells all over the building at stated times, and is checked by an electric button on the principal's desk.

At the age of twelve, girls pass on to the communal or the private school. Most of the secondary schools in Christiania are private, and are defined by the Act of 1896, which stated that the secondary school should consist of two departments, Middelskole (age twelve to fifteen years), and Gymnasium, consisting of a three years' course, leading to the university. The private schools are, of course, outside State control, but the curriculum is modelled to meet the State leaving examination (Middelskole Examen). The Middelskole examination is taken at sixteen years old, and consists, for girls, of written and oral tests in Norwegian, German, English, mathematics; and of an oral examination only in history, geography, science (including physics, botany, zoology, physiology), and religion, with further tests in gymnastics and needlework. Norway has followed the example of France in "feminising" education—classics have been dropped, modern culture is the keynote of the curriculum for girls. In one large secondary school in Christiania the girls get ten hours a week modern languages, three hours history, two hours religion, two science and geography, two drawing, one singing, and four hours gymnastics.

The modern-language teaching is on ultra-modern lines. The teachers are Norwegian, but in the early stages the lessons are entirely conversational. Later the children read an extract of English or German, and are questioned and answer in the language read, finally orally reproducing the subject matter. The English examination for Middelskole consists of the reproduction in writing by the candidates of some 400 lines of English prose, which is twice read by the examiner. A subsequent oral test is in reading and translation from the mother tongue, all questions being given and answered in English. The German examination, on the contrary, consists of a piece of translation into German, as in reproduction the candidates would slip grammatical difficulties.

History is also well taught. After an elementary stage of biography and an outline of national history, a good general knowledge of universal history is given. The writer saw a little girl of fourteen called out by the teacher and subjected to a fire of questions by her classmates. From Pericles to Pitt, from Newton to Nelson, from the Reformation to the French Revolution she held her own, and baffled the occasional probing questions of the teacher, till she went down on the date of the execution of Socrates!

The other subjects in the curriculum do not call for much comment. The teaching of the mother tongue is complicated by the vexed question of Danish or pure Norsk (Landsmaal or Bogmaal). The children have not, apparently, the literary taste which is both inborn and inbred in the French child.

Attached to every secondary girls' school is a cookery department, and there are technical schools in which girls learn household management and the peculiarly Norsk woodwork and weaving. As has been mentioned, needlework must be passed in the leaving examination; for the 1906 examination the candidates had to knit the heel of a stocking and work a patch. It will be seen that the Norwegian girl does not escape the everyday duties for which our high-school girls have, as a rule, neither time nor training. Nor does she neglect sport. She will do and dare anything on "ski" or "sledge," and has been known to excel in our own English tennis.

It is not suggested that these golden-haired, pink-and-white Vikings' daughters are perfect, but they compare favourably, in many respects, with their compeers in other lands. Their sportsmanlike courage in school and in the "world outside" lifts them head and shoulders above the French *jeunes filles* of to-day. Their intellectual freedom saves them from the "stodginess" of the budding German *Hausfrau*. And their American downrightness (so well expressed in their own word *ligefremhed*), together with a certain readiness to dispense with conventions, might well be imitated by the otherwise incomparable English maiden.

SECONDARY EDUCATION IN ESSEX.

THE report just issued by Prof. Sadler, of his survey of Secondary and Higher Education in the County of Essex,[1] is, we venture to think, not only a mark of the practical wisdom which the Essex Education Committee is exercising in its dealing with the most important matter entrusted to local authorities for many years, certainly since the burden of poor law administration was laid upon them; but a standing memorial of the educational work which this most distinguished scholar and administrator has been doing of recent years. It was unfortunate that Prof. Sadler's other engagements prevented the survey from being made before the summer of 1905; and that a variety of causes has delayed the publication of the report until twelve months after the survey was complete. It cannot, therefore, be regarded as submitting a policy to the committee; but we feel that it is to be of immense value in enabling them to carry out the policy already adopted, and in creating interest and enthusiasm in secondary education amongst men and women in the county, who are watching with some eagerness the action of those to whom the work of administration has been entrusted. For this reason we regret that the report has not been printed in a cheaper form, although its dis-

[1] County Offices, Chelmsford. Price 5s.

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tribution amongst members of local advisory committees of itself brings it under the notice of people in all parts of the county. We think also that its hints at the manner of working of the Essex Education Committee will be of value to local authorities in other parts of the country.

Essex is a county *sui generis*. It contains the most rapidly growing urban areas in the metropolis, a great industrial population on the banks of the Thames, a large number of ancient market towns, of vigorous manufacturing centres, of residential and seaside resorts; with a considerable population of fishermen and sailors, and one of the most bucolic districts in England. Prof. Sadler is right in asserting that no county in England "is more typical of the diversity of English life."

The county has been divided for administrative purposes into eighteen districts, each controlled by a local advisory sub-committee, nominated by the Council, and so representative of the best educational experience in each area. These centres were severally visited by Prof. Sadler, and after an exact description of their educational history and needs, he presents in his report a summary in every case of the course of development which he recommends. The county is studded with ancient grammar schools. Of these the most widely known is Felsted, which has, indeed, so far assumed a non-local character as to be left almost outside the consideration of the county. It is interesting, however, to observe that one of the educational experts co-opted to the Education Committee on its formation was the distinguished ex-headmaster, Dr. Dalton.

Of the rest, Chigwell is described by Prof. Sadler as having "made for itself a high position as one of the smaller public schools." It may be described as a local school with a very strong non-local element dominating it. It is quite evident that as London spreads out towards Epping Forest the local characteristics of the school will be accentuated and the County Committee and the Governors with wisdom on either side are co-operating for its development.

There is, on the borders of the same ancient parish, a wealthy and well-administered foundation—the Bancroft's School, under the control of the Drapers' Company. It is doing admirable work as a non-local school in educating and maintaining, free of charge, 100 boys, for the most part the pick of London elementary schools; and as a local school by making provision for twice the number of day-boys, resident in suburbs which are growing around it. Not less efficient are the schools in the two principal towns of the county—Chelmsford and Colchester. Both have history behind them, and some endowments, which have already been augmented by the county; and with their present headmasters are likely, under the new order, to increase their usefulness a hundredfold. At Brentwood, an old endowed school of classical traditions and excellent repute, proposals are being made for expansion, and for the inclusion of girls in the educational scheme of the Governors. Grays and Southend, newly created boroughs, have risen to the occasion with quite remarkable eagerness, the former adapting an old endowment for the education of boys and girls, and the latter creating a new municipal school—both of them of the highest order of merit for the educational work which has been done of the type which they profess. At Newport and Saffron Walden improvements have been made both in buildings and in the character of the education afforded; but because of their proximity further changes are inevitable. Earl's Colne has been practically re-endowed by an individual benefactor; and this, and other considerations, is rendering the change of the Endowed School for Boys at Halstead (some four miles distant) into a girls' school imperative.

Most of the other endowed schools have dwindled for lack of means; but in every case the county has been ready for many years to assist all active development, and there are few, if any, of these ancient schools which are not aided in some way by public funds.

Side by side there has grown up a large number of neo-secondary schools, particularly in the largely populated districts, most of them of a mixed or dual character. Prof. Sadler insists very strongly on the importance of maintaining, as far as possible, the traditions of the older schools and of assimilating to them those of the schools which are newly founded. He claims for some of the former class the maintenance of their classical character, and he expresses anxiety that the literary efficiency of the newly created schools should be lifted up by generous rivalry with the older grammar schools, until it is at least equal to their efficiency in mathematics and natural science. All of these proposals have, to some extent, been anticipated by the County Committee; but in this respect very much remains to be done. In many of the *new* schools the old "higher elementary" tone is prevalent, which, indeed, is more in consonance with the aims of governors and parents.

The question of the training of teachers engages considerable attention in the report. Pupil teachers for elementary schools are being dealt with at a very large number of existing secondary schools, and new schools, with pupil teachers' centres attached, are being set up in districts otherwise unprovided with them. An interesting suggestion is thrown out, though hardly possible for present fulfilment, of attaching a training department for secondary teachers to Chigwell School in touch with the Training College at Cambridge. Before this can be done, the numbers of the school must be doubled at least, for no training department can be thoroughly efficient in connection with any school of less than 200 boys. Since the report has appeared the mischief of sending to another endowed school pupil teachers and probationers for elementary teaching has been discovered.

Prof. Sadler notices with cordial approval the very thorough system of scholarships which pre-

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vails throughout the county. There are minor scholarships, which take boys from the public elementary schools to the secondary schools, at the rate of some 50 per cent.; there are major scholarships tenable at the higher secondary schools in the county as well as in places of higher education elsewhere; and there are scholarships in direct connection with the University; so that there is not a "poor boy" of intelligence in the county for whom the road to learning is not made easy.

Private secondary schools have naturally played a very considerable part in the education of the county hitherto, and amongst the number is—perhaps the best-known private school in the country—The Forest School at Walthamstow, which is the property of the Guy family, and under the present vigorous headmastership is supplying a great need over a large and populous residential district, while maintaining its original non-local character. It is not difficult to read into Prof. Sadler's mind the hope that the time will surely come when this school shall form a part of the county system. Like Felsted and its nearer neighbour, Chigwell, it maintains the old classical tradition, though all three of them are doing efficient work of a modern character, and may well be left with their present curricula undisturbed.

Of girls' schools there are but few in existence, and it cannot be denied regretfully that Essex is behindhand in this particular. One at Grays and another at Walthamstow represent the public foundations, and a highly efficient private school at Leytonstone has been already put under public government by the county. There are, moreover, keen supporters of the higher education of women on the County Committee who are anticipating Prof. Sadler's demands in this particular by a better provision; and already at Loughton, in the Epping Forest district, a good start has been made; and another is projected for the county town, and for Braintree.

There is certainly no county where the relations between the local authority and the secondary schools are more thoroughly agreeable. This is due in a large degree to the generosity of the way in which the County Council, in the first instance, accepted the nomination to seats on the Education Committee of representatives of the Universities of Oxford, Cambridge, and London, and of the headmasters and headmistresses of endowed schools, while they co-opted in addition ten others of experience in education, of whom four are women, and two others past headmasters of secondary schools. It is hardly necessary to add that this happy concord has not been weakened by the sympathetic relations of Prof. Sadler towards those who are actually engaged in educational work in the county; nor would it be fair to close this sketch of his work without a word of gratitude to the secretary to the Education Committee, whose praise is on the lips of all who are brought into intimate relations with him.

Outside the sphere of secondary schools, Essex, as in duty bound, is doing much for technical education of various sorts; and the greater part of this is the work of the old Technical Instruction Committee. None of it is more noticeable and deserving of the warm approval which Prof. Sadler passes upon it than the agricultural work which is being done in connection with the County Laboratories at Chelmsford.

THE HIGHER ELEMENTARY SCHOOLS.

THE report of the Consultative Committee, recently issued, is an interesting document, and one that will repay careful study. At last the Board of Education seems to be waking up to the fact that the scholars trained in the elementary schools must earn their own living, and that it is therefore advisable that some attempt should be made to make the education given in these schools have some bearing on the after life of the scholars.

Whilst not in the least underrating the valuable humanising and civilising work of the primary schools, especially in the large towns, it has long been evident to those who have to deal with the finished product, whether as students in evening continuation or technical classes, or as employers of labour, that in spite of the heavy expenditure, the result, from an intellectual point of view, leaves much to be desired.

We believe that this is due mainly to the fact that the education given is for the most part wanting in reality; it is bookish, and seldom succeeds in teaching the children how to obtain knowledge at first hand.

The education of after life, the education that comes as the result of contact with the world, and of experience of men and things, is all first-hand education, and upon a man's faculties for obtaining and making use of it his success in life and his usefulness to the community depend. To lead up to this, the education in our schools must be brought much more into relation with practical life than it has been hitherto. This is the problem that the Consultative Committee has had before it, and, although the report bears every evidence of a compromise, it is full of valuable suggestions for a solution.

The first point to be considered is the differentiation of the higher elementary from the secondary school; this, in our opinion, is mainly a matter of leaving age and of general aim. There will always be a very large number of both boys and girls whose parents are unwilling to keep them at school beyond the age of fifteen, and who, at the end of their school life, will go directly into industrial life. In the past the bright children of this class, who have managed to get to the top of the elementary school at the age of thirteen, have either been kept "marking time" at the elementary school, or have been sent to a secondary school for eighteen months or two years to "finish," with disastrous results, both to themselves and to the school from which they had not time to get any real benefit. These will be the scholars of the future higher elementary

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school; entering it at the age of twelve, they will be able to go through a course of real benefit to themselves before they leave at fifteen.

The secondary schools, the rolls of which have been swollen by the "one-year" and "two-year" scholar, will lose at first, perhaps, by their withdrawal; but they will really gain, in that they will be able to do their proper work, of training those whose parents are willing to send them to a secondary school at ten or eleven years of age, and are willing to keep them there until sixteen or seventeen years of age. The scholarship schemes of the chief local authorities now make provision for this long tenure of scholarships, so that the difficulty of the poor parent is met.

Upon the curriculum of the higher elementary school the Committee has much to say. From our point of view, we should say that, at the very least, the scholar, on leaving the higher elementary school, should have such a command over his own mother tongue that he can write an intelligent report on work that he has carried out himself; have such a practical working acquaintance with arithmetic that he can do a simple everyday workshop or office calculation with accuracy; be able to make a well-proportioned rough sketch of a simple object that will be understandable; and be able to use his hands.

These are of primary importance, and it ought not to be impossible to ensure that every scholar shall attain a fair standard in each, and yet not neglect that general "humanistic" training that it should be the work of every school to give.

These requirements necessitate that the backbone of the curriculum should be English (including history and geography), full use being made of good literature; elementary mathematics, taught with a practical bent, and largely on experimental lines; drawing of simple objects, both freehand and to scale, and manual work.

The subjects chosen for manual instruction will depend upon the needs of the community served by the school; some instruction in practical science of a simple character will have to form a part of it, at any rate.

In any case, the instruction in mathematics, drawing, and manual work must have a practical bent, and the arithmetical instruction especially must be of a more concrete character than it has too often been in the past. A lad should not, as is too frequently the case now, be able to manipulate large money sums, and do exercises in stocks and shares, and yet have not the remotest notion of decimals and simple mensuration.

This practical bent to the instruction necessitates that the teachers should be in contact with the requirements of practical life. The Committee has much to say about the source from which the teachers must be drawn. The debate as to whether the elementary or secondary schools should be the main source of supply has little but academic interest. Both sets of teachers in the past have been guilty, to an equal extent, of lack of interest in the practical life of the community. What is needed is that the teachers shall not only possess teaching ability, but also a live interest in the industrial life of the community for which they work.

The ideal training would be that of an ordinary school teacher, with two or three years' experience of factory or office life added to it. In practice it will probably be found best not to draw the staff entirely from one source. Experienced teachers from both elementary and secondary schools, with a sprinkling of men who have had experience in technical or trade schools, all working under the sympathetic direction of a head teacher open to new ideas and methods, will be found the best combination.

It is an interesting fact that the most successful heads of this type of school up to the present have been elementary teachers of the younger generation, who, by some means or other, have been in close touch with the workshops.

The Committee does well to lay stress on the fact that the teacher is the all-important factor in the success of the school, and local education authorities would do well to lay this to heart. As a rule, they are only too ready to spend money lavishly in expensive buildings and equipment, whilst they grudge adequate salaries to the men who have to carry on the work.

Something is said in the report about the distinction between the higher elementary and the trade school. This distinction is, in our opinion, merely a temporary one, and will tend to disappear: the trade school will become less of a trade school and the higher elementary school more of a trade school. Both have as their function the preparation to enter a trade, and the old English notion that the technicalities of an actual trade are best taught in the workshop is still sound.

The higher elementary school for girls will differ from that for boys, mainly in the character of the manual instruction, which will take the form of instruction in domestic subjects. The trade that most of them will follow will be that of wives and mothers, and no one at all acquainted with the magnificent work done in the domestic economy schools for girls, founded by the late Technical Education Board for London, can doubt that the practical side of the girls' higher elementary school should be developed on similar lines.

The Committee is to be congratulated on the general result of its labours. A great deal has been made, in certain quarters, of a supposed social bias in the report: this we have not been able to perceive: it seems to us an honest effort to deal with a pressing problem; and it is to be hoped that the schools, when established, will influence the ordinary schools, rendering their work more practical in character, and bringing it more closely into relation with the realities of life.

Milton's Paradise Lost. Books I. and II. By A. F. Watt. xxiv.+88 pp. (W. B. Clive.) 1s. 6d.—This is purely an examination edition, done with great care, closely condensed, and supplying all the needs of a candidate in a very thorough and painstaking fashion.

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MEETING OF THE CLASSICAL ASSOCIATION OF ENGLAND AND WALES.

THE enterprise of the Manchester Branch of this association in inviting the association to hold its annual meeting in Manchester was amply justified by the brilliant success of the gathering. Though the absence of the association's president, Lord Curzon, was a matter for deep regret, yet the city was fortunate in securing the presence of many of our most distinguished scholars and educationists, including the Master of the Rolls (Sir Richard Henn Collins), Mr. Justice Kennedy, Mr. S. H. Butcher, M.P. (the association's president for the coming year), Profs. Postgate, Sonnenschein, Robinson Ellis, Ridgeway, and M. E. Sadler, in addition to the headmasters of several of the more important public schools.

The presidential address, delivered in the absence of Lord Curzon by the Master of the Rolls, was chiefly remarkable as asserting the confident conviction that the study of the classical languages in this country, largely owing to the work of the association, has placed itself upon a new and securer basis: that without any attempt to monopolise the whole field of education, a claim finally repudiated by all thoughtful advocates of a classical training, without anything like jealousy of, or antagonism to, other studies, the association has asserted "the right of classical studies to a share in the education of the youth of this country." This is borne out by the fact that the newer universities, which offer facilities for higher education to a class not reached by the older universities, are putting into practice the principle that classical studies should be an integral part of education, and are strengthening their technical education by classical instruction. Mr. Justice Kennedy, who followed with an address on "The value of classical training for the legal profession," expanded the dictum of Sir Henry Maine that "legal science is a Roman creation," and the remark of a recent writer in the *Times* that "in all that concerns law we are connected in an unbroken and living union with ancient Rome." Lord Curzon, in a letter read to the meeting by Mr. Butcher, expressed a great truth in memorable words. "One reflection has occurred to me which it may not be irrelevant to express. When we are in great grief, we all of us turn for solace to the literary pastors and masters of our lifetime. Is it not a tribute to the great classical writers of antiquity that, severed as they are from us by such vast differences of age and circumstance and thought, there are many of us who yet find in their wise philosophy, and still more in their exquisite pathos, a relief which not even the great writers of our own language and time can as easily or as invariably impart? Is it not a remarkable thing that they should speak to us across the ages with accents so tender and so true? And may not this be counted an additional reason for holding them in unabated reverence?"

In the evening the association debated on the "relative function of classical and modern language teaching in secondary education." The Dean of Manchester (Bishop Welldon) in opening the discussion, with the view, as he expressly stated, of provoking argument, gallantly risked his reputation as a scholar and educationist by enunciating a number of somewhat disquieting paradoxes on the subject of classical teaching. He stigmatised the attention to Latin and Greek versification in schools as a scandalous waste of time, endorsed emphatically the opinion of the late Dr. Arnold, of Rugby, that it is hopeless to attempt to teach boys in an English school French pronunciation, and vigorously denounced the effort of "ill-informed or half-informed revolutionaries to produce what might be for the moment regarded as orthodox ancient pronunciation." Mr. J. L. Paton (High Master of Manchester Grammar School) slyly hinted that the views to which he had just listened made him look with disquiet upon the accession of the last speaker to his governing body. He thought classical teachers owe a great deal to the new methods which have been recently developed by modern language masters: we should imitate them and the Germans in employing the oral method in the teaching of Latin. Prof. M. E. Sadler dissented from the pessimistic prediction of a distinguished German scholar that in thirty years the study of Latin and Greek in German schools would be at an end: he personally does not feel that Greek and Latin are dead or ever will be; the fifteenth Idyll of Theocritus is newer than the *Daily Mail*. Prof. Ridgeway earnestly protested against the setting of grammar papers (in examinations) which require a knowledge of out-of-the-way forms not occurring in the authors most worth deading.

Friday's debate was somewhat academic in character, but at Saturday's meeting, at which the Dean of Manchester did not appear to uphold his heresies, the association devoted itself to the practical and important task of discussing, and voting upon, its committee's report on the pronunciation of Latin (see p. 422). The report emphasises the fact that we can in the main reproduce the sounds actually heard at Rome in the first century B.C.: and that the margin of doubt, though from the scientific point of view it is considerable, is nevertheless, from the practical point of view of the teacher, confined within very narrow limits: that the traditional English pronunciation entirely disregards historical accuracy, and accustoms the learner to fancy that languages existed as written rather than spoken: further, that it confuses sounds altogether distinct—a point subsequently illustrated humorously by Prof. Conway by the suggestion that a Roman boy, challenged by a playmate, must have said different things when his answer was "I yield" (cedo), and when it was "I knock you down" (caedo).

Mr. Butcher, in advocating the adoption of the report, after briefly reviewing the rapid strides which the new pronunciation has taken in the British Isles, made an eloquent appeal on its

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behalf for the sake of uniformity: there is now a babel of dialects spoken, and the boy goes through different zones of pronunciation—a very happy description of the chaos which at present exists in the matter. "The reformed pronunciation," he went on to say, "links speech and writing, language and literature, in a way that makes people feel that Latin was once a real spoken language. It makes the language far more living and less remote from life. It links together the ancient and modern world, and a boy learns the relation between Latin and the Romance languages, which simplifies the learning of all modern languages." Mr. W. G. Rushbrooke (St. Olave's School, London) testified from long experience to the absence of practical difficulties in the teaching of the new method. Prof. Postgate made the meeting merry by a playful allusion to Plautus's jest in the *Menaechmi*. "Tu, tu istic, inquam! Vin adferri noctuam, quae 'tu tu' usque dicat tibi?" At this point the secretary (Prof. Sonnenschein) read a letter advocating the adoption of the contemporary pronunciation of Italian as a guide to the pronunciation of Latin, in place of the scientific philological reproduction of the ancient speech recommended in the report: this was greeted with ominous silence, and failed to find a seconder.

The resolution in favour of the report was adopted with only one dissentient. It is perhaps a little unfortunate that hardly a discordant voice was raised in the debate, though a happy result that the vote was so nearly unanimous. No speaker directed attention to the argument so often used by advocates of the English tradition, that the new method, if practised with any carelessness, tends in the case of one or two vowel sounds to obscure quantity: to an English ear the difference in quantity of the first syllables of păter and māter is much more clearly marked by the traditional English pronunciation (păt and māte) than by the new pronunciation: still, there are few questions on which the balance of argument is so entirely one-sided.

At the close of the discussion, Prof. Sonnenschein moved that the "Council be instructed to draw up a memorial to the President of the Board of Education urging him to take action toward securing the adoption of a uniform system of pronouncing Latin in secondary schools aided by grants from the Board." The feeling of the meeting was decidedly adverse to any suggestion of invoking State aid on a controversial matter, and as time did not allow of a full discussion, the resolution was withdrawn.

Bacchylides. The text edited by Sir Richard Jebb. viii. +56 pp. (Cambridge University Press.) 1*s*. 6*d*.—It was a happy thought to print the text of Jebb's Bacchylides separately at a cheap price. Scholars are probably agreed that this is a more scholarly text than that of Blass, its only rival for the impecunious; it is also better printed, and altogether is a nice book. But why will publishers use square brackets to indicate the restored portions? A difference in type would do it equally well and without making the eye smart. Some of the pages are positively repulsive.

OF MAKING MANY BOOKS.

OF making many books, says the Preacher, there is no end; and, had he lived to-day, he would have extended his reflection to reprints. It is true that no list of reprints is available for the purchaser or the reader; of the value of such a list no one seems to have thought; but from the few books that are sent to a single paper, one may guess at the enormous total.

Probably nobody but the booksellers could tell who buys Law's "Serious Call," Bunyan's "Holy War," "The Advancement of Learning," Blake's poems, and Finlay's "Byzantine Empire." People do buy them and come and ask for them; they are no mere haphazard purchases. Not even the booksellers, however, could tell who reads these books. We must be charitable, and suppose that the purchasers read them. This being so, the reprint fashion must sincerely be recommended. Scornful people will have it that the books are never read, and, if read, not appreciated.

The cause of the unwonted reprint activity is to be found in the spread of reading, and this is due partly to the rise of a new class which wants to read books and can afford only cheap books, partly to the reaction against purely scientific teaching, and partly to the efforts of the Board of Education, the Home Reading Union, and other agencies. It is inevitable that a good deal should be reprinted which is not worth reprinting; but at any rate we may pick and choose: we are not compelled to buy.

The problem of home and school reading is not quite so easy of settlement as to some people it may seem. Unless it be at once conceded that a child or young person may read anything on the paternal bookshelf, a difficulty arises at once; for, as a rule, publishers will not cater very lavishly for the schools and for the young. The children's books (reprints) are, as yet, not in a very forward condition. We will put them aside for an instant, and glance at series not specially meant for schools.

Methuen's Little Library (1*s*. 6*d*.) is admirably done. "Pride and Prejudice," Bacon's "Essays," "Vanity Fair," the "Compleat Angler," are well printed and well edited; and we can only regret that Dante is represented by "Cary," and that "Rejected Addresses" and selections from the "Anti-Jacobin" find a place denied to "The Seven Gables." The Standard Library of the same publishers (1*s*.) is equally to be praised, though it is not so dainty; but how many cheap editions there must be of the "Vicar of Wakefield" and "Cranford." However, "Chatterton" and the "Little Flowers" and "Tamburlaine the Great" and (we suppose) the "Vita Nuova" deserve purchasers. The public would nevertheless benefit on the whole if four or five great publishing firms could amalgamate and, by purchase of copyright or other means, give us at a cheap rate some of the books

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we want; *e.g.*, a real Dante, a good collection of old plays, and a translation of French and German masterpieces done by persons who understand the art of translation. But Methuen's catalogues are a pleasure to read. To turn to Blackie (for one series only), what could be more delightful than a re-acquaintance with Purchas, Raleigh, and Sir Richard Hawkins? These texts, edited by Dr. Rouse, and called School Texts, are really new. In no other cheap form than this sixpenny one can we get such books as the "Discovery of Guiana" and the "Taking of the Galleon." Here is the "English Epic." To Blackie's English Classics have been added the "Select Poems" of Lowell and Browning's "Saul" and "Rabbi ben Ezra" (*2d.* each).

The King's Classics of Mr. Moring (*1s. 6d.*) are a venture comparatively unknown, but very welcome to the book-lover. Roper's "Life of Sir Thomas More," Dekker's "Gull's Horn-book," and the "Chronicles of Jocelin of Brakelond" would have been pounced upon with delight ten years ago. They are books we have all heard of; they are real books; and in their present pocket form are a better investment than any half-dozen of the latest novels.

Then, again, we might spend time in commenting on the unassuming Carmelite Classics, published by Horace Marshall, and, indeed, on Marshall's catalogue generally. It is true the Carmelites are not, like the books just mentioned, out of the way, for in some form or another we all possess the Prologue and Milton's "Comus"; but these editions are scholarly, cheap (*6d.* or *4d.*), and satisfying to the man who asks for this only—the book and reverence for the book. And they take up little room; the whole series might be stowed in a pocket. Miss C. L. Thomson, whose enthusiastic and scholarly work has been often praised in these columns, has selected illustrations of "English Literature from Defoe to Burns" (*1s. 4d.*, pp. 1–200). Other volumes are in preparation, and the whole seven should make a fine anthology. It is not with any desire to be hypercritical, but simply to direct attention once more to a common mistake that we ask: How could the exact editor print the famous line thus?—

Await alike th' inevitable hour?

It is true that the Golden Treasury prints it so; but the notes to the Golden Treasury rightly say "*awaits*, often misprinted *await*." Perhaps the newer edition of the Golden Treasury has recognised the error; the 1775 edition of Gray reads *awaits*.

The "London Merchant," "Fatal Curiosity," the "Maid's Tragedy," and "Philaster" are presented (in two volumes, *2s. 6d.* each) by Messrs. Heath; and surely these dainty volumes justify their title—the Belles Lettres Series. We have all the old-world spelling, admirable introductions, suitable notes, and good bibliographies. We have done very little in England for our old drama, though we are grateful enough for the Mermaid Series; but these books are fuller than the Mermaid plays, and all the old-world flavour is in them, binding, text, spelling, and all. They are edited respectively by the Master of Peterhouse and by Dr. Thorndike.

Macmillan's Cabinet Library of sixty-two books in their bookcase is another example of an admirable set of reprints; while with regard to Everyman's Library (J. M. Dent) every man is buying it, and there is little to say. But here we find along with the many more familiar books Speke's "Nile," "Lady Mary Montagu's Letters," Latimer's "Sermons," Cellini's Autobiography, Mrs. Cowden Clarke's "Girlhood of Shakspeare's Heroines," and Percy's "Reliques." The promise of this series is unbounded; it looks as though it were going to be another Bohn.

With all these at his command the limited-income book-buyer cannot complain. Yet, great as is the sale of these works, we are convinced it would be greater if a complete catalogue (*1d.*) of standard reprints costing not more than *2s. 6d.* each were to be furnished every three months to the principal bookstalls. It would probably be printed at a loss, but it would be an admirable advertisement. As it is, publishers are flying at one another's throats, and the public get half-a-dozen cheap editions of "Pride and Prejudice" and cannot buy "Phineas Finn." Moreover, while disconnected series abound, we have sometimes to wait for years for a connected series to be finished.

Between these books and the school books proper come the beautiful nature books, which are so well adapted for prizes and for rewards *to the children who appreciate them.* Macmillan publishes "Insect Life" and the "Souvenirs of a Naturalist," and Ginn has "Nature Study and Life." They are typical of a large series of fascinating nature books, and the names of Selous, Long, Thompson-Seton, are by this time household words with the young naturalist. It is a great mistake, however, to think that these books are appreciated by all, and story books by Cooper or Marryat (published now by many firms) are almost the only prose that certain boys will read with pleasure. The problem of girls' books has not yet been successfully attacked; it is possible that Miss Bland might solve it, if she were grown up; at present she is twelve years old, and is not growing. But what a childhood is hers!

When we turn to school books, *i.e.*, books of connected reading fit for schools, we are not so self-congratulatory. True, we have Kingsley's "Heroes" (Macmillan, Blackie, and Dent), Rouse's old-world texts (referred to above), E. J. Arnold's A1 Bright Story Readers, Dent's Temple English Literature Series—all admirable; but as yet they have not taken the hold that they deserve. Probably this is due to two facts—first, we have not yet got the teachers to appreciate these books, and, secondly, we want still to examine the children. We are not content to put libraries in

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all our class-rooms, to read the books, and leave the result to time. We still love "Readers"; we delight in fine-drawn work; we are the slaves of notes. We blind our eyes to the fact that it is only a small portion of Shakespeare, Wordsworth, Tennyson, Burke, Macaulay, the "Spectator," that the boy and girl appreciate or ought to be able to appreciate; we *will* not see that English literature and a love for it cannot be taught, but may be learnt; and, above all, we will not spend money in literary apparatus. Fortunes have been made in school books, arithmetics and geographies, and possibly in "Readers"; but in the new type of book, the dainty unschool-like Stories from the Sagas or the Boy's Froissart, the fortune is, we should think, far away.

It seems that the ideal reading-book (for children of thirteen or fourteen) is one like "Old Christmas" (Macmillan), published at 6*d.* years ago, and now out of print, and illustrated by a masterhand. It has been reprinted in other forms, not quite so alluring, and it may be seen in a series, the Illustrated Pocket Classics; but the large, beautiful sixpenny edition is lost for ever. For a set of books like this, large, carefully chosen and well illustrated (it is o. p., so we can speak very freely), we would give dozens of the flamboyant readers and sparsely illustrated Coopers and Scotts. The publisher knows his business best, and no doubt such a series would not pay. But supposing that the illustrators, the riotous, imaginative, sympathetic illustrators were available (names of the dead and living crowd to the memory—Batten, Caldecott, Greenaway, Thomson, Lemercier, Gordon Browne), and the large, easily opening, well-printed, thin, cheap book were possible, what a sale might be expected for, and what results might be expected from, the "Wonder Book," "Miss Kilmansegg," "Bracebridge Hall," the "Ancient Mariner," the "Talisman," and, above all, the Old Testament. No one who has not seen an easily handled, profusely illustrated book in the hands of a class can judge of the effect. The present writer can, as he pens these words, feel the silence of the large class-room, and the indrinking of the book so different from, and yet quite as interesting as, *Sketchy Bits.*

PSYCHOLOGY AS A LABORATORY STUDY.[1]

IT has been said that the world is made to measure. There is ambiguity in the statement, but the man of science accepts it as an expression of the fact that quantitative equivalence is universal and may, with adequate perseverance in research, be formulated. All our sensory impressions are due to physical stimuli. With variations of the stimulus, there are variations in sensation. From the time of Weber (*circa* 1831) to the present day an increasing amount of experimental work has been carried out with the object of ascertaining the exact quantitative relation of these two sets of variations. Broadly speaking, it seems probable that, within the normal responsive activity of a sense-organ, to obtain a series of equal increments of sensation, the increments of stimulus must be in geometrical progression. In other words, if the sensation-values are represented by ordinates, and the stimulus-values by abscissæ, the curve which passes through the points determined by observation is approximately logarithmic.

Prof. Titchener's work contains an exhaustive consideration and critical discussion of the methods employed in such psycho-physical investigations, and the results which have been reached by the leaders in this field of research. It is admirably executed, and those who wish to learn the present position of this branch of scientific inquiry cannot do better than consult these volumes.

In the United States a course of laboratory practice is part of the recognised training of a student of psychology. Its value as discipline cannot be questioned. It forces the student to think and to translate his thought into the devising of fresh experiments for the solution of definite problems. It gives him that sense of confidence which arises from doing work upon his subject instead of merely letting the subject do work upon him. Our friends across the Atlantic find it difficult to understand why we in England are so slow to follow the German lead in this matter. That we shall do so to a somewhat greater extent is not improbable; that we shall afford to this discipline a position analogous to that which it occupies in the universities of America is unlikely.

While freely admitting that all exact studies are of value, there seems to be a feeling in this country that the range of psycho-physics is a restricted one. It throws light indeed on borderland problems lying between physiology and psychology. It increases our sense of the continuity, of some kind, that exists throughout nature. It strengthens our confidence in a quasi-mechanical—that is to say, a scientific—interpretation of physiology, more especially if we are justified in inferring that psycho-physical formulæ are essentially the expression of physico-physiological relationships. But from the point of view of worth for the intellectual life, it has yet to establish a claim independent of that of physiology on the one hand and that of mental science on the other. Quantitative relationships there may be and doubtless are, but for most of us the worth of psychology is independent of quantitative measurements. Be that as it may, however, Prof. Titchener has earned and should receive our gratitude for giving us a work as able as it is comprehensive.

[1] "Experimental Psychology, a Manual of Laboratory Practice." By Edward Bradford Titchener. Vol ii. Quantitative Experiments. Part i. Student's Manual. Part ii. Instructor's Manual. (Macmillan.) Part i., 6*s.* net; Part ii. 10*s.* 6*d.* net.

The Sir Roger de Coverly Papers. By R. G. Watkin. xx.+116 pp. (Dent.) 1*s.* net.—Handy, cheap, useful, elegant, carefully done, and furnished with a readable introduction.

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THE NEW BUILDINGS OF THE GIRLS' HIGH SCHOOL, LEEDS.

ON September 29th H.R.H. Princess Louise paid a visit to Leeds to open the new Girls' High School at Headingley. The buildings, which have accommodation for 300 pupils, are interesting to teachers as embodying the latest ideas on school architecture and equipment. The general plan is simplicity itself. In the centre is the assembly hall, round which, on three sides, are grouped the other rooms. The hall is lighted from the north, and is the height of two floors. Opening into it by means of arches are the main corridors of the building, so that the seating accommodation can be easily increased on special occasions.

FIG. 1.—The Chemical Laboratory, Leeds High School for Girls.

The south front of the school, which faces a broad terrace and extensive grounds, contains the majority of the class-rooms. Here, on the ground floor, are the library, VI. form, head- and assistant-mistresses' rooms, and, at the sunniest corner, the preparatory department, with its own entrance and cloak-room. In the eastern and western wings are the lobbies and cloak-rooms for the elder girls, and above them the music-rooms, removed as far as possible from the ordinary class-rooms. The second floor contains the laboratories, studios, dining-rooms, and kitchen. The gymnasium forms a separate building, but is connected with the main block by a covered way.

While the exterior of the building is plain, almost to severity, the greatest care has been given to the decoration of the interior. Each room has its own colour scheme, varied as far as possible to prevent monotony. The hall, beautiful in itself, is to be decorated with casts of ancient sculpture. It is hoped to cultivate in these ways the artistic taste of the girls. In a similar way it is intended to encourage the love of literature by making the library a beautiful and comfortable room, which the elder girls are allowed to use freely for their private reading.

The importance of science and art has been fully recognised in planning the buildings. The whole space above the assembly hall is occupied by a double studio, with an excellent north light. The electric light fittings are arranged above the long line of windows, so that the failure of daylight causes no disturbance of the work in hand—an advantage of no small importance in foggy Leeds.

The physics laboratory—to be used also for geography—presents few striking features beyond the simplicity of the benches and the very large amount of wall space which has been arranged for use in mechanics. Two items of the equipment for geography are uncommon in schools. Suspended from the ceiling over the platform is a large globe, counterpoised so that it can be raised out of the way when not in use, and above the blackboard is fixed a dust-tight case containing the maps on spring rollers, so that they can be drawn down as required. In both this room and the biological laboratory a simple arrangement has been contrived whereby lantern-slides can be shown without excluding daylight. The lantern is placed on the demonstration table, and is tilted upwards, the pictures being thrown a comparatively short distance on to a three-foot screen fixed near the ceiling.

The chemical laboratory contains benches for twenty-four students, of a less massive type than is customary. The cupboard accommodation is therefore somewhat limited, but free access is given to the whole length of every pipe and drain—an advantage which science teachers will readily appreciate. No central shelves disfigure the benches and break the view down the laboratory, the reagents in constant use being arranged on glass sheets slightly raised above the level of the table. The balance

FIG. 2.—The Kitchen Laboratory, Leeds High School for Girls.

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cases are fixtures along a side wall, with glass doors sliding back into the top of the case. In front of the demonstration table are arranged rows of narrow benches, which may be used for taking notes during demonstrations or for doing simple experimental work in heat and chemistry.

On the top floor, also, is the kitchen laboratory, the purpose of which demands special explanation. The committee having applied to the Board of Education for recognition as a secondary school, is bound to provide progressive instruction in science and manual work. The latter, in the case of girls, may take the form of a practical course of housewifery. A kitchen laboratory has therefore been equipped, so that the "reason why" of every culinary operation may be investigated. It contains large ranges for use with coal and gas. The students' benches, which are provided with smaller stoves, are arranged in an open square on three sides of the room, the demonstrator's stove and table forming the fourth side. The plain deal benches give sufficient space for pastry making, ironing, and other domestic operations, and in the window spaces provision is made for laundry-work. Continuation classes in domestic science for girls who have left school will be held in these rooms under the direction of the Yorkshire Ladies' Council of Education.

The biological room, which contains an aquarium, is shortly to be supplemented by a garden laboratory, which will be fitted so that small classes may be taken in it. A botanical garden is being laid out, with special plots reserved for experimental work and for the use of girls who wish to learn gardening.

The grounds, surprisingly beautiful considering their proximity to the town, contain several tennis courts, as well as an old-fashioned garden, sheltered by fine trees, which is reserved for the use of the mistresses and the VI. form.

In such pleasant surroundings the school will doubtless continue the traditions connected with the distinguished names of Miss Powell and Miss Kennedy, and, under the able guidance of the headmistress, Miss Lowe, and her efficient staff, develop on many sides, and enter upon a still wider sphere of honour and usefulness.

THE PRONUNCIATION OF LATIN AND GREEK.[1]

AT the second general meeting of the Classical Association held in London on January 6th, 1905, the following resolution was adopted with all but complete unanimity:—

"That the Council be requested to nominate a representative committee to consider and report on the best method of introducing a uniform pronunciation of Latin into the universities and schools of the country, and that it be an instruction to this committee to confer with the committee to be appointed for a similar purpose by the Classical Association of Scotland.

"That the same committee be empowered, if they deem it advisable, to consider what changes in the present pronunciation of Greek should be recommended for general adoption."

The Council accordingly sought the advice of the following representative committee of teachers and scholars whose experience or special knowledge gave authority to their judgment upon the question:—Mr. S. H. Butcher, Dr. R. S. Conway, Mr. C. A. A. Du Pontet, Prof. Robinson Ellis, Mr. R. C. Gilson, Dr. J. P. Postgate, Dr. W. H. D. Rouse, Mr. W. G. Rushbrooke, Mr. S. E. Winbolt, and Miss M. H. Wood.

After a preliminary consideration of the Classical Association's scheme, the Philological Societies of Oxford and Cambridge, at a joint meeting held at Oxford, moved in the same direction, and adopted substantially identical proposals, which the Council of the Classical Association decided to support. The Council *appeals to all classical teachers in the United Kingdom to adopt the method of pronunciation here set forth*, and by so doing to remove the diversities and ambiguities of practice which have long been a serious obstacle to every stage, and especially to the early stages, of classical study in this country.

PREAMBLE TO THE REPORT.

In drawing up the scheme of Latin and Greek pronunciation the committee has been in general guided by the following considerations:—

1. Both the discussion of the question at the meeting of the Classical Association, and the evidence before the committee of the practice of different schools and universities, seemed to show that there was little hope of general agreement upon a uniform scheme if its basis were sought in any one of the varieties of what has been known as "the English pronunciation." It appeared, therefore, at the outset, apart from the practical and theoretical drawbacks involved in this usage, that the committee could not discharge the duty entrusted to it without seeking some other system. And since the old basis of English custom has thus admittedly broken down, the only other starting-point which seemed natural or expedient was the ancient pronunciation of the Romans and Athenians themselves.

2. In any attempt to frame a method for general use there are two conditions the fulfilment of which appeared to the committee to be equally desirable.

(*a*) On the one hand, the scheme proposed should present, if our knowledge can secure it, at least a reasonable approximation to the sounds which actually existed in ancient times; and on the other, it should avoid placing any unnecessary difficulty in the way of beginners in Latin or Greek.

The progress of philological research has made it possible to meet the first requirement. We can in the main reproduce with certainty the sounds actually heard at Athens in the fourth century B.C. and at Rome in the first. The margin of doubt that remains, though from the scientific point of view it is considerable, is nevertheless, when seen from the standpoint of the practical teacher, confined within very narrow limits.

For example: some scholars may feel a doubt whether Latin *ī* more nearly resembled French (close) *i* in *livre* (= Eng. *ee* in *queen*) or Italian (open) *i* in *città* (= Scotch *i* in *pity*, sometimes represented by English writers as *ee*, "peety"); but that it was immeasurably nearer to Eng. *ee* than to the English (really diphthongal) *ī* in *line*, *tide*, &c., is clearly demonstrable and universally admitted.

(*b*) In the second place, after careful discussion, and, in the case of Latin, the experience of some thirty years, the committee feels that the scheme proposed offers no difficulty that can reasonably be called serious—certainly none so baffling as the confusions of the "English" method. In the oral work of a class, in particular, it has been found that the adoption of the ancient pronunciation meant a great economy of labour.

3. The chief faults[1] of the method which it is now proposed to banish may be stated as follows:—

[1] Report of a Committee of the Classical Association of England and Wales.

[1] This paragraph is adapted by permission from the Introduction to Messrs. Arnold and Conway's "Restored Pronunciation of Greek and Latin" (1895).

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(1) Like other methods which prevail locally in various parts of Europe, the "English" fashion chiefly finds acceptance from the immediate convenience of giving to the symbols of the Roman alphabet, and the corresponding symbols of the Greek, the sound which they most commonly denote when used to write English. But even this convenience is delusive, since the pronunciation of English varies greatly in different parts of the kingdom, and, as will be seen, where the standard or London pronunciation is most carefully inculcated, there the result is, in fact, in some respects furthest from the true Latin sounds. A Scotch or Yorkshire lad will pronounce Latin *ŭ* much more correctly, and distinguish it far more clearly from Latin *ā*, if left to his own instincts than if trained by a cultured teacher who adopts the unreformed method.

(2) It altogether disregards historical accuracy, and accustoms the learner to fancy that languages exist as written rather than as spoken: for he is put to no trouble to discover the true sounds of the language he is studying. It is to him in a very real sense a "dead" language: he ceases or never begins to realise that by its help men and women lived, felt, and thought: and is directly encouraged in a mistake which defeats the very purpose of his education, the mistake of regarding books as something remote from life rather than as an integral part of the life of mankind and therefore of that for which he himself is preparing.

But the local "English" method of pronouncing Latin and Greek must be condemned also on the following more definite grounds, which involve consequences smaller in themselves but obviously and immediately mischievous:

(3) It confuses distinct sounds, and hence distinct words: *e.g., ceu* and *seu, caedit, cedit* and *sedit, caesae, caecae* and *sese, noscet, nosset* and *nocet, Lucio, luceo* and *luteo* (to say nothing of *so-lutio*), κεῖται and χαῖται, καλνῷ, κείνῳ and κινῶ are pronounced alike.

(4) It obscures quantity: *mensis* (abl. plur.) is pronounced as *mensis* (gen. sing.), and very often *mensa* (nom. sing.) just as *mensa* (abl. sing.): *malum* (evil) and *malum* (apple) are made alike, and so *venit* (present tense) and *venit* (perfect). The same confusion occurs in the case of Greek, though not to the same extent.

These two defects largely conceal from the student the musical and rhythmical beauties of the two languages.

(5) The learner acquires by ear at the very beginning false views as to the relations of languages, and, in particular, fails to recognise the natural tie between Latin and the Romance languages. Latin *a*, instead of being pronounced as French *a*, is made to sound like French *ei*, that happening to be the common value of English *a*. In this way the interesting and, to a boy's mind, stimulating consciousness of the connection between language and history is for the time, at least, obscured.

4. The committee thinks the present a suitable opportunity to raise the question whether the vowel sounds peculiar to modern English should be allowed to remain in the teaching of Greek any longer than in Latin. For if the vowels and consonants can be correctly pronounced in Vergil's *cratera*, they can in κρατήρ; if in *heros*, then in ἥρως; if in *musa*, then in μοῦσα. It is true, no doubt, that to give to the Greek accents their real musical value is too difficult an art for the average schoolboy; and the committee feels little hesitation in leaving the question on one side. But in this and some other matters mentioned below in the Greek scheme, there seems no reason why what is both true and, in practice, important should be rejected because in other things of less practical importance either the truth or its application to practice is difficult to reach. Most of the pronunciations which are included in the committee's proposed scheme in Greek, especially those of the vowels and diphthongs, have been long in use in more than one Scottish university, and as Prof. Goodwin records (in the preface to the seventh edition of his Greek Grammar) are adopted with something like uniformity in America.

5. It may perhaps be felt that the effort needed to introduce the method here advocated into schools and universities where the "English" method is still current is in itself an embarrassment. But this difficulty is steadily decreasing. The Cambridge Philological Society's pamphlet, which as long ago as 1879 urged the reform of Latin pronunciation, has had a wide influence; the University of Wales has adopted a restored pronunciation of both Greek and Latin, and accepted it in Latin of all candidates for its Matriculation, for the last ten years; and recently the Association of Assistant Masters has by resolution advocated the same reform. The committee ventures to hope that all friends of classical studies will loyally support the Classical Association in its attempt to free the study of Greek and Latin from the entanglements of an irrational though time-honoured usage which have at length become a serious burden.

THE RESTORED PRONUNCIATION OF LATIN.

A. Primary Points.

The following points are those which it is a matter of practical importance to impress upon students of Latin from the outset.

Quantity.—In pronunciation the quantities of the vowels must be strictly observed: *e.g., lăbor*, not as English *lābel*; *mĭnor*, not as English *mīnor*; *nŏta*, not as English *nōte*. This is essential for the proper appreciation, in prose, of sound, rhythm, and distinctions of meaning (*e.g., lăbor, lābor*), and, in verse, of metre also.

Vowels.—The following is approximately the pronunciation of the vowels.

ā (prātum), as *a* in fā*th*er, not as *a* in m*a*te.

ă (răpit), the same sound shortened, as *a* in *a*ha.

ē (mēta), as *a* in m*a*te (Fr. *é* as in bl*é*), not as *ee* in m*ee*t.

ĕ (frĕta), as *e* in fr*e*t, not as *ee* in m*ee*t.

ī (fīdo), as *ee* in f*ee*d (Fr. *ie* in am*ie*), not as *i* in f*i*ne.

ĭ (plĭco), as *i* in f*i*t, not as *i* in f*i*ne.

ō (nōtus), as *o* in n*o*te (or nearer Italian *o* in R*o*ma).

ŏ (nŏta), as *o* in n*o*t (Fr. *o* in b*o*tte), not as *o* in n*o*te.

ū (tūto), as *oo* in sh*oo*t (Ital. *u* in l*u*na), not as *u* (yew) in ac*u*te.

ŭ (cŭtis), as *u* in f*u*ll, not as *u* in acc*u*rate, nor as *u* in sh*u*n.

In all cases the vowels are nearer to the Continental than to the English sounds.

Diphthongs.—The sounds of the diphthongs may be arrived at by running the two component vowel-sounds rapidly together, the second being pronounced lightly. The most important are:—

ae (portae) = a͡e, nearly as *ai* in Is*ai*ah (broadly pronounced), Fr. ém*ail*, not as *a* in l*a*te.

au (aurum) = a͡u, as *ou* in h*our* (as Ital. *au* in fl*au*to), not as *aw* in *aw*ful.

oe (poena) = o͡e, nearly as *oi* in b*oi*l, not as *ee* in f*ee*t, nor as *a* in l*a*te.

N.B. In recommending these sounds for ae and oe, the committee is guided mainly by practical considerations, since it has been found by experience that this pronunciation is of great convenience for class purposes. The committee regards it as clear that this was the pronunciation

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given them in early Latin, and that they were still clearly distinct from the long *ē* in the time of Cicero, though their precise sound then is difficult to determine, and would probably be still more difficult to inculcate in an English school.

Consonants.—c, g, t, s are always hard, and never vary in pronunciation.

c (cepi, accepi), as *c* in *c*at, not as *c* in *c*id or *c*ept.

g (gero, agger), as *g* in *g*et, not as *g* in *g*ibe or ex*g*erate.

t (fortis, fortia), both as *t* in na*t*ive, for*t*ia not as poten*t*ial.

s (sub, rosa, res), as *s* in *s*it, or *ce* in ra*ce*, not as *s* in ro*s*e or rai*s*e.

Similarly when compounded—

x (exul)=ks, as in e*x*tract, not gz.

bs (urbs)=ps, not bz.

They are hard even before i.

c (facio), as *c* in *c*at, not as *s*, nor as *sh*: *e.g.*, condicio=condi*c*io, not condi*s*io, nor condi*sh*io.

g (tangit), as *g* in *g*et, not as *g* in *g*ibe.

t (fortia, ratio), as *t* in na*t*ive, not as *t* in na*t*ion.

s (sponsio), as *s* in spon*s*or, not as *s* in respon*s*ions or conclu*s*ions.

i and u consonantal.

i (j), *e.g.*, jacio, as *y* in *y*ou, not as *j* in *J*ack.

u (v), *e.g.*, volo, practically as *w* in *w*e (Fr. *ou* in *oui*), not as *v* in *v*ery.

r is always trilled, even in middle and at end of words: *r*arus; pa*r*ma, datu*r* (not pronounced as English palmer, hatter).

Double consonants are separately pronounced as in Italian, one in one syllable, the other in the other: *e.g.*, vac-*c*a, pul-*l*us.

B. Secondary Points.

Diphthongs.

Rare { ui (huic) = u͡i, as Fr. l*ui*.
eu (heu) = e͡u, nearly as English *ew* in n*ew*.
ei (ei, interj., or Pompēī, voc. of Pompeius) = e͡i, as *ey* in gr*ey*, not as *i* in d*i*ne.

Accent.—If the penultimate syllable is long, it has the accent; if the penultimate syllable is short, the antepenultimate has the accent, *e.g.*, negāret, agrēstĭbus.

The accented syllable was pronounced with greater force as well as on a higher note; but the differentiation in force was considerably less than in English. The separate syllables of a Latin word should be more evenly and distinctly pronounced than in English, and more nearly as in French.

C. Additional Points.

A (and afterwards B) should be mastered by the pupil.

There are other points which should always be observed by the teacher. These are set forth in

(i) "Pronunciation of Latin in the Augustan Period." Cambridge Philological Society. Deighton, Bell and Co., Cambridge. (3*d.*)

(ii) "The Restored Pronunciation of Greek and Latin." Arnold and Conway, Cambridge Univ. Press. (1*s.*)

Greek Pronunciation.

A. Primary Points.

Quantity.—As in Latin, the quantities of the vowels should be strictly observed. For example, the short vowels in πατὴρ, τίνω, χόρος, ὕδωρ, should be carefully distinguished from the long vowels in φρᾰτρία, κῑνῶ, χώρα, ὑμεῖς.

Vowels.—ᾱ and ᾰ, ῑ and ῐ, ε and ο (the last two being always short) may be pronounced as the corresponding vowels in Latin.

η (long open *e*) as *è* in Fr. il m*è*ne (nearer Eng. *ea* in b*ear* than *ey* in gr*ey*).

ω (long open *o*) as *o* in Fr. enc*o*re (nearer Eng. *oa* in br*oa*d than Eng. *o* in b*o*ne).

υ as French *ü* in d*u* pain.

ῡ as French *ū* in la v*ue* or Germ. *ü* in gr*ü*n.

Diphthongs.—αι=α+ι as Eng. *ai* in Is*ai*ah.

οι=ο+ι as Eng. *oi* in *oi*l.

υι=υ+ι as Fr. *ui* in l*ui*.

In ᾳ ῃ ῳ the first vowel was long, and the second only faintly heard.

ει.—The precise sound of ει is difficult to determine, but in Attic Greek it was never confused with η until a late period, and to maintain the distinction clearly it is perhaps necessary to allow English students to pronounce it as Eng. *eye*, recommending them, however, to form the first vowel as near the front of the mouth as possible. In fact it must have been nearer to Fr. *ée* in pass*ée*.

αυ=α+ (primitive Greek and) Lat. *u*, as Eng. *ow* in g*ow*n, Germ. *au* in H*au*s.

ευ=ε+ Lat. *u*, nearly as Eng. *ew* in *few*.

ου as Eng. *oo* in m*oo*n, Fr. *ou* in r*ou*te.

Consonants.—π, β, τ, δ, κ and γ as *p*, *b*, *t*, *d*, *c* or *k* and *g* respectively in Lat.; except that γ before γ, κ and χ is used to denote the nasal sound heard in Eng. *ankle*, *anger*.

ρ, λ, μ, ν as Lat. *r*, *l*, *m*, *n*.

σ, ς always as Lat. *s* (Eng. *s* in mou*s*e), except before β and μ where the sound was as in Eng. ro*s*ebush, ro*s*emary.

The committee does not see its way to suggest any alteration in the current pronunciaion of the aspirates.

ELEMENTARY EDUCATION IN LONDON.[1]

The London County Council became the Local Education Authority for the Administrative County of London on May 1st, 1904, and, consequently, not only succeeds to the powers and duties of the London School Board, but also is required "to maintain and keep efficient all public elementary schools within the area which are necessary." Further, the council is commissioned by the Education Acts "to supply or aid the supply of education other than elementary, and to promote the general co-ordination of all forms of education." That the council's task is one of great magnitude may be appreciated from the following facts:—

The council purchases sites, designs, and erects its own schools; engages, pays, and gives further training to its own teachers; equips the schools with furniture, desks, apparatus, and tools; supplies fuel and light, and does its own cleaning and repairs. Further, the council proposes to train, from pupil teachers to certificated teachers, many of its own staff.

The cost of public education in London is £5,000,000 gross, or £3,000,000 net, that is, after deducting grants from the Board of Education. Of the net cost, £2,500,000 is required for elementary education and £500,000 for higher education.

The average roll of the public elementary schools is 750,000.

[1] From a report of the Education Committee of the London County Council submitting the return prepared by the executive officer relating to elementary day schools maintained by the council for the year ended March 31, 1905.

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The council partly supplies and partly aids the supply of higher education. The following are the institutions either maintained or aided by the council :—

Maintained by the council—13 technical institutes and schools of art; 3 training colleges; 8 pupil-teacher centres; 12 secondary schools; 370 evening schools.

Aided by the council—4 university colleges; 29 polytechnics, technical institutes, and schools of art; 1 training college; 51 secondary schools.

As the local authority for all branches of education, it will devolve upon the council to erect additional secondary schools and to provide training colleges.

The late authority was responsible for the administration of the Industrial School Act; it maintained and managed 4 industrial schools, 3 day industrial schools, and 2 truant schools; in addition, it contributed towards the maintenance of, and was responsible for, 3,000 children in 65 schools, with which it entered into agreements. The council has taken over all this work, in addition to the work in this direction which previously devolved upon it as Prison Authority. The council further took over from the late authority the administration of special schools for the blind, deaf, physically defective, and mentally defective.

The staff of teachers in the service of the council numbers about 20,000. Of these about 17,000 are engaged in public elementary schools, and receive salaries amounting to more than £2,000,000 a year. The staff engaged in the administration of educational work in London numbers about 500, and in addition there are about 400 officers engaged as attendance officers for the enforcement of school attendance.

In order to maintain and keep efficient all public elementary schools within the area which are necessary and are not provided by the council, it was essential to ascertain the facts respecting those schools. One of the first and most important tasks of the council was, therefore, a survey of non-provided schools. The survey involved the premises, the organisation, and the staff. It was found there were 199,342 children in attendance at 433 non-provided schools, as against 550,858 children in 527 provided or council schools. On the result of the council's survey, 113 non-provided schools (229 departments) were declared unsuitable from the point of view of structure. Further structural improvements were required in a great number of cases. In all, between the closing of unsuitable buildings and the reduction of accommodation through structural improvements, 68,824 school places were lost. The loss was inevitable, but the replacement throws a heavy burden on the council. As to staff, it was not found possible to bring the schools at once into line with the conditions which obtain in the provided schools. Difficulties of organisation, dislike to working in inconvenient buildings, interests of existing staff, and actual scarcity of teachers, stood in the way. Great improvements were, however, immediately made. On May 1st, 1904, there were at work in non-provided schools 2,192 certificated teachers, 1,597 uncertificated teachers, and 800 supplementary teachers. The council's scheme of fixed staff for 1905-6 included 2,773 certificated teachers, 1,496 uncertificated teachers, and 537 supplementary teachers, an improvement represented more by change in character than by increase in numbers, although the total staff was increased by 217.

Towards the close of 1905 the council adopted a scheme of scholarships which, though it forms part of the provision of higher education, must profoundly affect the public elementary schools. The council's regulations provide that annually all children who are attending public elementary schools in London, and who are not less than 11 years of age, and not more than 12 years of age, on July 31st, should be nominated for the competition for junior county scholarships, provided that, in the case of boys, they are in the sixth or a higher standard, and in the case of girls, in the fifth or a higher standard. The probationer scholarships are open to candidates who are not less than 14 years of age, and not more than 16 years of age, on July 31st.

The expenditure on books, apparatus, and furniture (including the expenses of the Stores Department) for the year was as follows :—

	Books and Apparatus	Furniture
Council schools	£114,362	... £33,524
Non-provided schools ...	30,550	.. 1,963
	£144,912	£35,487

It may be of interest to mention the following details of quantities of miscellaneous items supplied to the public elementary day schools (provided and non-provided) maintained by the council in the course of a year, viz. :—

Ink (fluid), 11,520 gallons; ink powders sufficient to make 14,400 gallons; 5,000,000 plain copy books; 1,250,000 plain drawing books; 20,000 reams foolscap; 15,000 gross pencil-work books, and 11,300 reams pencil-work paper (pencil-work books and paper being used in place of slates, the use of which has been abandoned); 956 reams cartridge drawing paper; 2,200 reams blotting paper; 65,000 gross pens, and 3,000 gross penholders.

A new scheme of salaries reduced the number of grades of head teachers from five to three, and, while the maximum salaries of £400 (masters) and £300 (mistresses) were not raised, the number of posts of the highest grade was considerably increased. The annual increment was doubled in the case of head teachers of grades II. and III., and improved for head teachers of grade I. (the lowest). The rate of increment and the maximum for assistant teachers were both increased, and when the scheme is in full operation, assistant masters will be eligible to rise from £100 to £200 by increments of £5 for the first two years, and £7 10s. after; and mistresses from £90 to £150 by annual increments of £4. This scale was made applicable to all teachers in London County Council schools, and to all new teachers appointed to non-provided schools.

Existing teachers in non-provided schools were placed on the scale at their existing salaries under conditions which provided that those teachers whose salaries were very much below the salaries allowed by the scale of the late authority, should receive increased annual increments, which would enable them to reach the scale amounts in the course of a few years, and that those teachers whose salaries were in excess of the scale amounts should wait a certain time before commencing to receive increments. The position of the non-provided teachers was thus greatly improved.

It was felt that the method of selecting head teachers for provided schools was unsatisfactory, and a new scheme was prepared. The main features of the scheme were the preparation by the educational adviser, the executive officer, and the chief inspector of an annual promotion list of 225 names (75 of men, 150 of women), after full consideration of the reports on the applications made by managers and inspectors acting separately. Applications for head teacherships are received only from candidates on this list and from existing head teachers.

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The council receives its main supply of teachers from the training colleges. The students leave the training colleges in July and begin work, to a large extent, as "unattached" teachers at the close of the following August. Some time necessarily elapses before all these can be permanently placed. Supply and demand would be about equal if the last of the college teachers were appointed to vacancies occurring in the following July. The college supply for the session 1903-4 had, however, approached exhaustion before October, 1903, and the vacancies—places unfilled by permanent staff—increased from that date until the summer of 1904. During the session 1904-5, the supply did not approach exhaustion until November, 1904. In 1905-6, the supply was not exhausted until April, 1906. The prospects of the supply not failing during the session 1906-7 until towards the close of the session are distinctly favourable: it is hoped that the period of "dearth of teachers" may then be approaching a close. Vacancies amounting to nearly 1,500 occur annually; and the distribution of college teachers to fill these vacancies is somewhat difficult. Teachers show marked preference for some districts and marked dislike for others. So great, in fact, is the council's difficulty in securing teachers for certain districts that schools have had to be scheduled as schools of special service, and additional salary, limited to six years, is paid to teachers therein.

Unlike the late authority and the council, the managers of non-provided schools have not depended to any considerable extent upon the training colleges for their teachers. Prior to "the appointed day," *i.e.*, the day on which the maintenance of non-provided schools fell upon the Council, the funds of the managers of these schools did not permit of payment of salaries of well-qualified teachers, with the result that when the schools came as a charge upon the council, more than half the staff of assistant teachers were uncertificated or supplementary teachers. They would appear to have depended largely upon their own pupil teachers who passed the King's Scholarship examination and became uncertificated teachers. The most energetic of these teachers afterwards passed the Acting-teacher's Certificate examination, but it was unusual for a teacher to go through a training college course.

Since the appointed day the status of the staff of non-provided schools has been considerably improved; the salaries offered by the new scale to well-qualified teachers and the additional training college accommodation provided in London will, it is hoped, within a few years, secure for the non-provided schools a staff equal in status to that of the council's schools.

Accommodation.

The following table gives the total accommodation (permanent and temporary) at Lady Day, 1904, and at March 31st, 1905. The accommodation given for the non-provided schools is that recognised prior to the recent survey made by the council:—

	Accommodation	
	At Lady Day, 1904	At March 31, 1905
L.C.C. schools	579,030	588,703
Non-provided schools maintained by the council	211,170	209,208
Other efficient schools	3,951	3,904
Total	794,151	801,815

During the year 1904-5, the council provided additional permanent accommodation for 12,564 children. Of these places, 11,238 were provided by means of 14 new schools, and 3,407 by the enlargement of 12 existing schools; 2,081 places were lost, however, by the revision of accommodation in 41 existing schools.

Apart from the effect of the survey, the accommodation of the non-provided schools decreased by 2,009 places during the year. In addition, a reduction amounting to 67,180 places was caused by the survey.

The number of permanent school places provided in L.C.C. and non-provided schools is 10,555 higher than in the preceding year, leaving the effect of the survey out of consideration. If, however, regard is had to the effect of the survey, there are 56,625 fewer places than in the previous year.

Attendance.

The following table gives the total figures of average roll and attendance in the years 1903-4 and 1904-5:—

	Average No. on Roll.		Average Attendance.		Percentage of Av. Attendance to Av. Roll.	
	Year ended Lady Day, 1904	Year ended March 31, 1905	Year ended Lady Day, 1904	Year ended March 31, 1905	Year ended Lady Day, 1904	Year ended March 31, 1905
L.C.C. schools	550,329	554,576	485,343	494,018	88·1	89·0
Non-provided schools maintained by the council ...	207,141	202,508	175,360	172,739	84·6	85·3
Other efficient schools ...	3,000	2,825	2,524	2,410	84·6	85·3
Total ...	760,470	759,909	663,227	669,167	87·2	88·0

The following are the percentages of average roll to average attendance in the various departments of the schools in 1903-4 and 1904-5:—

L.C.C. schools—

	Boys	Girls	Mixed	Infants
1903–1904	91·6	88·9	90·4	84·2
1904–1905	92·4	90·1	91·4	85·1

Non-provided schools maintained by the council—

1903–1904	Not available			
1904–1905	89·6	86·3	87 0	80·3

Teaching Staff.

The teaching staff engaged in the elementary day schools maintained by the council may be considered in three different aspects:—

(1) Number and qualifications of teachers;

(2) The salaries of teachers;

(3) The proportion which the number of scholars bears to the number of teachers.

The teaching staff in council schools consisted of 11,988 members on Lady Day, March, 1905, as against 11,835 on Lady Day, March, 1904. (The numbers at Lady Day, 1904, are printed in brackets.) Of this total 505 [498] were head masters; 968 [969] head mistresses; 3,350 [3,275] assistant masters, including 71 [57] "supply" teachers, and 64 [74] "unattached" teachers; 7,160 [6,728] assistant mistresses, including 274 [151] "supply" teachers, 328 [365] "unattached" teachers.

There were also 192 [365] uncertificated assistant teachers, and 2,388 [2,295] pupil teachers. It will be noticed that the number of uncertificated assistant teachers has very considerably diminished, but this is mainly due to the changed date of expiry of pupil teachers' engagements.

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During the year 1904-5 there were 81 new appointments of head teachers, 1,337 new appointments of assistant teachers and 12 resignations of head teachers, and 517 of assistant teachers.

As regards non-provided schools maintained by the council, there were at March 31st, 1905, 993 head teachers, and 3,443 assistant teachers of various grades. The number of appointments dealt with by the council in these schools during the year 1904-5 was 29 head teachers and 985 assistant teachers.

The salary of head teachers in the council's service ranged from £140 to £400 and assistant teachers from £65 to £175. In the council schools the average salary of head masters was £290 15*s.* 9*d.* [£291 6*s.* 7*d.*], of head mistresses £208 7*s.* 11*d.* [£207 18*s.* 4*d.*], of assistant masters £144 16*s.* 8*d.* [£144 0*s.* 2*d.*], assistant mistresses £109 2*s.* 10*d.* [£108 17*s.* 1*d.*]. As regards non-provided schools the average salary paid to head masters on July 31st, 1905, was £187 7*s.* 7*d.*, and to head mistresses £115 2*s.* 1*d.*

The average salary of assistant masters, of whom two-thirds were uncertificated, on July 31st, 1905, was £89 15*s.* 3*d.*, and on August 1st, 1905, £92 9*s.* 9*d.* The average salary of assistant mistresses, of whom more than two-thirds were uncertificated or supplementary teachers, on July 31st, 1905, was £55 7*s.* 4*d.*, and on August 1st, 1905, £62 3*s.* 6*d.*

The average number of children to each adult teacher in council schools was 43·6. This average is obtained by dividing the average attendance by the number of the permanent adult staff plus half the number of "supply" and "unattached" teachers. At Lady Day, 1904, this number was 42·2, and at Lady Day, 1903, it was 41·9. It will be seen that the ratio of number of children to the number of teachers has slightly risen in these three years.

HISTORY AND CURRENT EVENTS.

WHEN Napoleon, in the beginning of the last century, was in such a position that he threatened to make Europe at least, if not the world, into a French empire, the spirit of nationality awoke, at first in Spain, then in Germany, and to a certain extent in Italy, to overthrow the impending monarchy. This spirit of nationality, based on identity of race, of religion, of language, was not unknown before, especially in England and France; but Germany had not known it, and her writers were "cosmopolitan" in ideas, despising politics and the "meaningless" wars which arose therefrom. But from Napoleon's time the spirit of nationality has spread. It has united Germany to the exclusion of "Austria," it has united Italy, it has separated Belgium from Holland, it threatens almost daily to tear the Austro-Hungarian Empire in pieces. The map of Europe to-day represents the triumph of nationality. States are almost conterminous with nations, and the fever of the Balkan peninsula is due to the passions of Greeks and Bulgars, of Albanians and Slavs.

BUT the spirit of nationality is now winning further triumphs. Not only in Wales and in Ireland, where it is expressing itself in endeavours to revive in literature languages which seemed to be dying out before the language of the "predominant partner," but in Asia, much to the astonishment of those who think of "the East" as the area of perpetual changelessness, we are witnessing to-day strange new movements of the peoples. Of Japan it is scarcely necessary to speak. No newspaper reader can possibly have escaped hearing of "Bushido," the soul of a nation, and indeed our "far Eastern" ally is being held up to us almost daily as an example for our imitation. But because Japan has been such a success and has achieved victory against a European Power that loomed so large on the western shores of the Pacific, China, the neighbour whose interests are so closely interwoven with those of her island neighbour, is beginning at last to wake, and certain ugly rumours remind us that the Boxer movement is not an isolated phenomenon.

HOW does this sentiment of nationality affect our British Empire? Does it make for unity? or for disintegration? Wherever "Englishmen" are settled (and it does not seem to matter much if these are Scots or Welsh or even Irish) the desire for unity is strong. Though there is perhaps little loyalty to Parliament or its leading statesmen, there is much enthusiasm for the Empire typified in the Crown. But there are other "nations" within the Empire than the "English," and some of them are beginning to realise their own existence. In South Africa, *e.g.*, besides the conflict of Boer and Briton, there are apparent the beginnings of a movement among the African natives, specially among those who have developed an independent Christian Church. And the movement among the Bengalis, which has lately seized on the partition of Bengal for administrative purpose as a grievance round which to rally the otherwise pointless discontent, creation as it is of our own system of education with its strength and its weakness, is a further illustration of the fact that the British Empire is not entirely British.

THE movement towards democracy is connected closely with that of nationality, but must not be confused with it. A nation may be satisfied with the rule of a "despot" so long as he maintains the local independence against the stranger. But generally the sense of the importance of the individual is developed in a national struggle, and sooner or later there arise successful demands for a share in the control of affairs. This formula explains the history of Europe from 1815 onwards until the establishment of parliamentary institutions. And now all the world seems to believe in "parliaments" as the panacea for political evils. Russians want a Duma, though their country is too big for the organisation of public opinion, and Persia, feeling relief from Russian pressure, is making a "constitution" for itself. There are even folk in India who imagine that a "National Congress" can represent that continent, containing as it does religions and races which, but for the *Pax Britannica*, would soon reduce the peoples living between the Himalayas and Cape Comorin to a state of anarchy.

ITEMS OF INTEREST.

GENERAL.

As several of our readers have recently inquired about the "Teachers' Notes on English History," which have appeared in these columns, and have asked for more, we here print a short statement showing where the previous articles are to be found. The first of a new series of similar papers, practically starting from the terminus of the old series (1688), and dealing with the last two centuries of our history, will be published next month. We have preferred to deal with the later rather than with the earlier periods for two reasons: in the first place the mediæval period has been pretty fully handled in Mr. A. Johnson Evans's series of nine papers in the first two volumes of THE SCHOOL WORLD; and, secondly, we are

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under the impression that there is a growing tendency to favour modern rather than mediæval history. At any rate, the substitution of the period 1485–1901 for English history down to 1700 at London Matriculation, the extension of local periods from 1820 or 1832 down to 1867 or 1871, and the apparent adoption of the eighteenth century as a permanent period at the Oxford and Cambridge Joint Board examination, all seem to point in this direction; and we hope that the majority of the history teachers among our readers will approve of our interpretation of these facts.

The following list of the "Teachers' Notes" may be useful for reference: 1399–1603, introductory, September, 1900; 1399–1509, December, 1900; 1509–1603, July, 1900; 1603–1715, introductory, October, 1899; 1603–1625, November, 1899; 1625–1649, January, 1900; 1649–1660, February, 1900; 1660–1688, April, 1900; 1688–1715, May, 1900. Besides these Notes there have been two lists of topics arranged alphabetically for 1399–1603 in June, 1899; for 1603–1715 in June, 1900. All these back numbers are still in print.

An examination of the Regulations and Syllabus for the Certificate Examination of the Board of Education, for Teachers in Elementary Schools, 1908, shows that important modifications have again been made in the subjects prescribed. Scarcely a year passes without similar alterations of a far-reaching kind being introduced. The Board seems indeed to be unable to decide what is a reasonable standard of attainment to expect from an elementary-school teacher seeking to obtain its qualifying certificate. A similar spirit of vacillation characterises the regulations governing the Preliminary Examination for the Elementary-School Teachers' Certificate, which are subjected to the same kind of annual alteration. The desire evinced by the Board to prevent its various regulations from becoming stereotyped and antiquated is praiseworthy, of course, but the continual changes are inimical to satisfactory work. The Board ought now to be able to make up its mind to leave its syllabuses as they are for a while, and thus inspire a feeling of confidence, among tutors and others whose business it is to interpret the regulations, that the instructions received will hold good for a few years at least, and that it is worth while to prepare carefully a suitably graduated course of lessons in each subject.

The irritating habit of constantly changing syllabuses is, unfortunately, not confined in its effects to official documents laying down courses of study for elementary-school teachers. The syllabuses applicable to schools and classes other than elementary have in recent years been subjected to the same pottering policy, and the most recently published "Directory" foreshadows more changes to be made in 1908. In addition to this, teachers in secondary schools are receiving so many "proposed" schemes of work that in self-defence they are being driven to the necessity of disregarding official communications altogether and of continuing to work on their own lines. While it is desirable for the Board to possess an intelligence department to collect the results of carefully planned experiments made in various parts of the country, it is unnecessary constantly to pester teachers with "revised" instructions or new syllabuses incorporating hastily-arrived-at conclusions which will be discarded in a month or two. Education must be an orderly growth, and this persistent pulling-up of a delicate plant to examine and interfere with its roots is likely to be fatal to success. Perhaps the Board is suffering from the fervour of youth, and its conduct may be mellowed by the sobering effects of experience; but in any case the methods it is now following are earning for it the character of indecision and instability.

In his presidential address to the National Federation of Class Teachers held at Nottingham, Mr. R. T. Mawbey dealt with the unattractiveness of the elementary-school class-teacher's work. He said: "Conditions of service are far from good, prospects are not bright, and salaries seldom commensurate with the labour required to procure an entry into the ranks of the 'qualified.' A teacher has certain social obligations. He cannot afford to neglect his tailor or shoemaker, he cannot live in any hovel, and if he is to be an exemplar he should, in return for his services not only to the locality but to the State, be supplied with the wherewithal to keep up his status as a member of an honourable profession. As conditions have been in the past, there is now a dearth of certificated teachers, and unless inducements of the right kind are offered, such as the withdrawal of irritating regulations and the improvement of the prospects of the class-teachers, there is very little hope of securing an adequate staff for our primary schools. Since 1876 the number of children on the school registers has increased 106 per cent. The number of girl pupil-teachers has increased 6 per cent., but the number of boy pupil-teachers has decreased 63 per cent. The giving of scholarships and bursaries will not counteract the evil that has been done. The majority of teachers will now be class-teachers for life, and unless there is a prospect of a reasonable reward being given for years of faithful service, sufficient desirable entries will not be forthcoming to make up for deficiencies and to supply future needs. As it is, the section which is entirely lacking in qualifications for teaching has increased from 5,210 in 1890 to 18,296 in 1904. This is a serious matter, for unless provincial authorities, either voluntarily or under compulsion, make such radical alterations in their regulations as to secure for their service teachers as well qualified as those in better governed areas, there will still be this waste of the nation's wealth; for undoubtedly many children leave these inadequately staffed schools lacking those attributes necessary to carry them on the road to success."

The president in his address also spoke on the question of the staffing of primary schools. Mr. Mawbey, quoting from recent statistics of the Board of Education, declared that of the teachers employed only 46·5 per cent. are qualified to teach. The remaining 53·5 per cent. consists of a heterogeneous collection of successfully vaccinated and other variously qualified and unqualified practitioners. The blame for this state of affairs lies at the doors of those education authorities who employ and encourage the existence of unqualified teachers. The crux of the whole question is, however, that the profession is not attractive. In spite of some slight improvement in recent years, much remains to be done before the ideal of the Federation can be realised, viz., schools staffed with thoroughly efficient teachers in charge of classes of manageable size.

The Girls' School Music Union, a society which has for its object the advancement by theoretical and practical work of music in secondary schools for girls, has completed two successful years of existence. Lectures, discussions, concerts, and other meetings for teachers and students are arranged from time to time. The union provides a room in New Bond Street for the use of its members, and other facilities for the study and practice of music. The autumn meeting of the union was held

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at the Notting Hill High School on October 6th, when an address, with illustrations on the piano, was given by the president, Mr. W. H. Hadow, on "The Principles of Melodic Form." A short discussion followed, and afterwards a concert was given by members of the society.

THE fifth annual meeting of the North of England Conference will be held at the Central Baths Hall, Bradford, on January 3rd, 4th, and 5th, 1907. The subject of a united conference in the morning of January 4th will be the best curricula for secondary schools, and the discussion will be prefaced with papers by the Rev. W. H. Keeling, Mr. R. Lishman, and Miss McCroben. The second united conference on January 6th will be concerned with the development of technical education in a large manufacturing centre. Papers will be read by Prof. Charnock and Principal J. H. Reynolds. Sectional meetings have been arranged in a great variety of subjects, including the reforms needed in elementary education, the use and abuse of public examinations, the training of the colour sense in children, systematic courses in evening schools, manual training schools (American and English), the physical condition of children, the teaching of geography, and the teaching of drawing in Paris primary, secondary, and apprentice schools. Tickets of admission are free, and can be obtained on application to one of the honorary secretaries, Mr. F. Stevens, the Rev. W. H. Keeling, and Mr. T. Garbutt, Education Office, Manor Row, Bradford.

WE are officially informed that the Government has decided to appeal in the matter now commonly spoken of as the recent West Riding judgment, which decided that education authorities are not obliged to make any contribution out of the rates toward the cost of giving denominational instruction in non-provided schools. We understand that this decision is due to the necessity which exists for clearing up, if possible, some of the numerous points of difficulty which have arisen consequentially upon the judgment. It appears that, owing to the particular form of the judgment, local authorities find themselves in great doubt as to whether certain forms of expenditure will or will not now be legal, and several difficult issues are inevitably raised in addition to the one specific point that was alone decided, technically speaking, by the judgment. Both the Board of Education and the Local Government Board have been appealed to by local authorities in all parts of the country for guidance or advice, and, as neither of these departments has any authority to pronounce on the matters in question, local authorities' administration is in danger of drifting into chaos, and individual members naturally fear surcharge. It has thus become imperative to endeavour to have the whole matter cleared up in its various ramifications, with as little delay as possible.

IN a recent issue of the *Morning Post* Prof. M. E. Sadler asks the oft-repeated question: What is a secondary school? and shows that it still remains unsolved. He quotes the definition of a secondary school supplied by the Board of Education, and proceeds to demonstrate by recent statistics that facts are against the theory of sixteen being the normal minimum leaving age of a secondary school. Prof. Sadler maintains that these statistics show "that we must deliberately lay our plans to devise courses of secondary education which will be intellectually appropriate to the needs of those who may leave school at fifteen or fifteen *plus*."

PROF. SADLER'S own views as to how schools should be classified may be gathered by the questions he propounds in concluding his article:—"Why should not all education up to twelve years of age, in whatever type of school or department of a school it may be given, be classified and inspected as primary? And why should not the various courses of general education from twelve years of age onwards (whether twelve to fourteen or fifteen or twelve to seventeen or eighteen, or to any intermediate point) be recognised collectively as secondary, but under that general name be re-grouped according to their duration and, to some extent, according to their differing subject-matter?" The adoption of some such course need not mean the inspection of all large elementary and every secondary school by two separate sets of inspectors—there is no need to draw a sharp line between the province of the elementary- and the secondary-school inspector. It is quite clear that a simplification of the present classification of schools would greatly assist parents, and the public generally, to understand our educational system.

ATTENTION was directed in the October number to the series of articles in the *Times* on public-school education. The seventh in the series, by Mr. A. C. Benson, discussed some of the problems of form teaching. Great stress is laid upon the importance of the personality of the teacher. Kindness, strictness, and liveliness are the three qualities most important in combination. If a man is considerate and good-humoured when all goes well, and excessively disagreeable when things go wrong, he is generally a good teacher. As an aid to effectiveness in teaching, Mr. Benson recommends the form master to cultivate a taste for general reading; variety is a tremendous force in dealing with immature minds. These are only a few of the points of a most readable article.

IN an article on "Engineering" in the series, the headmaster of Felsted School summarises the conclusions arrived at by the Institution of Civil Engineers, and printed in our issue for last June. These include the following opinions:—(1) a boy should not begin specialising until he is about seventeen years old, and has passed a leaving examination; (2) he should study at school advanced history and geography, essay and précis writing, English literature, colloquial French and German, a little Latin (up to the age of fifteen), mathematics; (3) he should have a general knowledge of physics and chemistry; (4) devote special attention to drawing and mensuration; (5) as a recreation, acquire skill in carpentry, turning, and surveying. Taking Felsted as a type, an attempt is made to show that these requirements are more than met in the case of public-school engineering students.

THE Rev. C. Eccles Williams (Summer Fields, Oxford) in another article discusses the question of entrance scholarships and cram. On the latter point his remarks are eminently sound. For the ordinary bright boy to attain to scholarship standard without any pressure it is all-important that he should be properly taught from the time he enters the schoolroom, and not, as too often happens, be allowed to waste the valuable years between nine and eleven in learning how not to learn. Given this steady preparation, "cram" is unnecessary. With regard to the actual working hours, the writer furnishes some interesting statistics, based on the curriculum of a school which prepares for public-school entrance scholarships. The older boys' *maximum* working hours are 36½ per week, including Sundays; the younger boys', 30½. The hours of sleep are, respectively, ten and eleven per day. Put in

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another way, it is shown that out of about 100 waking hours per week, 36 are devoted to "work," 64 to meals and recreation.

There seems every probability that the ideal great co-educational public school described by the Rev. Cecil Grant in our issue for March last will shortly be an accomplished fact. Suitable premises and grounds have been secured for the purpose at St. George's School, Harpenden, and the new institution will be opened in January, 1907, under the headmastership of Mr. Grant himself, who is leaving Keswick School to take up the new work.

We have received a copy of *The Young Citizen*, a new penny illustrated monthly magazine for boys and girls. Amongst some of its features are monthly nature notes and anecdotes of plant and animal life; "red letter" days connected with the chief events in our history; news of geographical, commercial, or historical interest; music; the roll of honour, dealing with recent deeds of heroism. Particulars are also given of a scheme involving the distribution of 200 book prizes as the result of competitions in handwriting, drawing, &c. *The Young Citizen* is published by Edward Lloyd, Ltd., 12, Salisbury Square, London, E.C.

The question of the employment of women in schools has caused much discussion in Germany. At the Munich conference of the German Teachers' Union a resolution was passed in favour of the employment of women as well as men in the public schools, a rider being added that girls' schools should not be under the entire, or the preponderating, influence of women teachers. The number of women teachers has been increasing rapidly in Germany; in Elsass they now number nearly half the staff, and the men are beginning to see their occupation threatened. The difficulty is caused by the necessity of earning a livelihood that is being forced upon women. It is quite as much a social difficulty as a pedagogic one. A number of women hope to reach the altar through the school. But if they strive to do the work of a man they break down in health. Apart from questions of physique, the training of women teachers has been neglected in Germany. It has often been left to religious communities, and one reason for the opposition to the woman teacher arises from a desire to curtail the influence of the Church. The German considers that each sex should join in training the children. If a girl be taught at the high school by women only, she never comes under the sterner influence of the man. In some respects, and at certain ages, a woman is a better guide for a girl; but the woman teacher is not a mother and the school is not a home.

Dr. Ullmann, in his book "Zur Lehrerinnenfrage" (B. G. Teubner), passes a more favourable verdict. He says that man has underrated the teaching power of woman, whose influence, even when untrained, is very marked with young children. So long as a child's imagination is active, the best teacher it can have is a woman. In higher classes where abstract matters are more prominent the man, he thinks, is more efficient. But this does not condone, in his eyes, the action of the men in the Berlin Gemeindeschulen. Their assumption that they have a prescriptive right to the upper classes of girls is due rather to conceit than merit. Qualitatively, Ullmann thinks a woman's work as good as a man's, but he would give her less to do in the week.

An examination for ninety Assistants of Excise will be held next December. The subjects are handwriting, English composition and orthography, arithmetic, and geography; the age-limits are eighteen and twenty-two. Assistants of Excise receive a salary commencing at £50 a year and rising by annual increments of £5 to £80. They also receive an officiating allowance of 2*s*. a day when actively employed. The new scheme (*v*. vol. viii., p. 193) for this examination comes into force after December 31st, 1906.

An examination for fourth-class clerkships under the London County Council is announced for the present month. Part i. will be held on November 12th, 13th, and 14th; part ii. on November 26th and the following days. The fees must be paid on the 1st and 22nd respectively. The subjects of examination and the prospects are shown on p. 109 of the present volume.

The London County Council also announces an examination for appointments in the minor establishment, where the rates of pay are:—Lower section, 15*s*. to 40*s*. a week; upper section, 40*s*. to 60*s*. a week; rising in each case by annual increments of 2*s*. 6*d*. a week, subject to a certificate as to conduct and work from the head of the department concerned. Promotion from the lower to the upper section will take place only on a resolution of the Council. Candidates must be British subjects, and must be over fifteen and under seventeen years of age on the latest date for receiving application to sit for the examination, and must be free from physical defect of every kind. The first year's service is probationary. The subjects of examination are handwriting, orthography, English composition, arithmetic, English history, geography, a general intelligence test, and either French, or German, or elementary experimental science, including practical work, or drawing. The particulars given of the general intelligence test are:—"Data of the problem will be supplied, and a certain time will be allowed for the study of the same, after which questions will be asked of the points dealt with." There will also be examinations in shorthand and in typewriting, including stencil work, and all candidates with a knowledge of these subjects should sit for the examinations, as there are some positions in the Council's service where shorthand and typewriting are essential. The marks gained in these subjects will not, however, count in the general competition. The first examination will take place on January 22nd, 1907, and on the following day, if necessary. Applications must be made on the printed forms, which can be obtained "by forwarding a stamped addressed envelope to the Clerk of the Council, or on personal application" at the County Hall, Spring Gardens, S.W., and must be returned by December 17th, 1906. "The Council reserves the right of selecting for appointment any candidate out of the order of merit if such candidate has shown in his examination special qualifications in any particular subject requisite for an appointment."

The syllabus of subjects for the examinations under the new regulations (August issue, p. 356) for junior appointments in the Admiralty and War Office and in the Exchequer and Audit and Army Accounts Departments, has now been issued. Mathematics i. includes algebra, geometry, and trigonometry; Mathematics ii. includes these and mechanics; while Mathematics iii. requires some knowledge of solid geometry, differential and integral calculus, co-ordinate geometry, and rigid dynamics. In French, German, Latin, and Greek, where the subject is defined in the same way for classes ii. and iii., the standard of questions in class iii. will be higher than in class ii. In class ii. there will be a general paper on

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English history from the Conquest to the death of Queen Victoria. In class iii. 2,000 marks will be assigned to English history, and 2,000 to European history. Under the former, candidates may select one of the periods 1066–1485 or 1485–1901; under the latter, either A.D. 800–1519 or 1519–1901. In class iii. chemistry includes the outlines of organic chemistry with the method of analysis and the method of arriving at the formula of an organic compound. In class iii., to the physics for class ii. are added the more advanced parts of heat, light, electricity, and magnetism, together with sound.

SCOTTISH.

THE annual general meeting of the Educational Institute of Scotland was held this year in the McEwan Hall, Edinburgh University. In the absence of Sir William Turner, the principal, Prof. Darroch, on behalf of the University Court, welcomed the Institute to the University, and expressed the hope that for all time to come it would continue to meet within the precincts of the University. In the course of his retiring address, the president, Mr. Service, Coatbridge High School, outlined the main provisions of an ideal Education (Scotland) Bill. The Lord Advocate's plan for the retention of the parish as the unit of area met with scant shrift, but approval was given to his plea for an area specially delimited for educational purposes, provided the principle were laid down that such an area should be of a size to provide within itself facilities for both secondary and primary education.

THE report of the Institute's parliamentary committee on the question of direct parliamentary representation led to a prolonged discussion. The committee submitted a report approving generally of the proposal, but recommending that no steps be taken to make it effective, in view of the financial difficulties involved. This finding did not meet with much favour, and in the end a motion was carried instructing the general committee to take the necessary preliminary steps for the direct representation of the Institute in Parliament. The general body has thus shown much greater courage than the committee, and it will be interesting to watch developments. The committee declares that members, especially lady members, will not pay the increased subscription that will be necessary, whereas the general body of delegates maintain that what England has done, Scotland can do. *Nous verrons.*

OF the making of associations there seems no end, yet few are able to justify their creation so completely as the newly formed "English Association," which was successfully set a-going at a representative meeting in Edinburgh University, over which Prof. Saintsbury presided. The object of the association is to afford opportunities for intercourse and co-operation amongst all those interested in English language and literature; to help to maintain the correct use of English, spoken and written; to promote the due recognition of English as an essential element in the national education; to discuss methods of teaching English and the correlation of school and university work; to encourage and facilitate advanced study in English language and literature. The new association will probably be affiliated in some way to the parent association in England, but for all practical purposes it will be an independent body.

THE quatercentenary celebrations at Aberdeen University occupied the greater part of a week, and from beginning to end there was not a single hitch. Town and gown forgot old-time rivalries and antipathies, and worked together in complete accord. The occasion was certainly a notable one in many ways. The quatercentenary of any institution is rare enough to call for special notice, but in the case of Aberdeen University it may be said to be the quatercentenary of the educational birth of the whole north-east of Scotland. The impetus given to learning by the founding of the University 400 years ago has gathered momentum down the centuries, and it is no exaggeration to say that the north-eastern counties have a passion for education that marks them off from all other parts of Scotland. No wonder, then, that the whole populace felt a keen personal interest in the magnificent series of functions that marked the occasion, and gave themselves up with quite a southern abandonment to the enjoyments of the hour, or, rather, week.

THE visit of the King and Queen on the closing day to open the new buildings connected with Marischal College rounded off the celebrations in an ideal fashion. The quadrangle of Marischal College, where the ceremony took place, was filled with a crowd of more than 4,000 people, representative of the intellect and learning of every civilised country. The new buildings were not unworthy of the occasion. Picture the Houses of Parliament in dazzling white, and some idea may be had of "this dream in granite," as someone called it. This refractory medium was probably never before fashioned to such graceful purpose. The chief figures after the King and Queen were the Chancellor, Lord Strathcona, the principal, Dr. Marshall Lang, and the Lord Rector, Sir Frederick Treves. All of these were indefatigable in their efforts, and to them the chief credit must be given for the complete success of the whole proceedings.

THE Association of Secondary Teachers in Public Schools (Modern Branch) has forwarded to the Secretary for Scotland and to Mr. Struthers, Secretary of the Education Department, a letter protesting against any change of date in the leaving certificate examination. The present date, it is contended, gives an educational session interrupted only by two or three short vacations, so that the work from September to June progresses without any serious break in the continuity of study. To hold the examinations at Easter would only give a session of seven or eight months, and the attendance after the examination would tend to fall off considerably. The fact of Easter being a movable date, and that an Easter vacation is not universal in Scotland, are additional arguments advanced against the change. The overwhelming weight of opinion, so far as yet declared, is strongly against the proposal, and it is probable that the Department itself has not foreseen all the disadvantages inherent in its scheme.

THE annual meeting of the Association of School Board Clerks and Treasurers was held this year in the School Board Offices, Glasgow. Mr. Robert Kerr, Hamilton, who presided, speaking of the Provision of Meals Bill, said that the intention of the Bill was good, but the charitable and other agencies throughout the country were able to undertake all that was asked for by the Bill, and it would be a mistake to set up new and costly machinery for the purpose. In regard to the circular issued by the Department proposing a change in the date of the leaving certificate examination, he said that the alteration would involve a reclassification of school work. The attendance between April and June would be seriously affected, and the grants would be correspondingly decreased.

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FOR the L.L.A. examination in May last, 989 candidates entered for examination at 73 centres, as compared with 975 candidates in 1905; 321 candidates entered this year for the first time as compared with 310 last year; 89 students have this year completed the requisite number of subjects, and will receive the L.L.A. diploma of the University; 1,442 papers were written on the various subjects, and of these passes were obtained in 785 instances, and honours in 179.

THE annual general meeting of the Parochial Schoolmasters' Association was held in the Royal High School, Edinburgh. The members forming it are a fast diminishing band, and an increasing pathos attaches to each annual meeting as the gaps in the ranks of the "old guard" become yearly more apparent. The secretary stated that 80 "old parochials" were still in active service, and the total membership was 107.

THE conference of the Scottish District Unions, which are affiliated to the National Union of Women-workers, was held this year in Aberdeen. The Countess of Aberdeen presided, and in course of the sederunt papers were read dealing with the work of women in public capacities. Mrs. Ogilvie Gordon contributed an exceedingly interesting and valuable paper on the subject of a "Local and International Educational Bureau." The aim of such an institution in industrial centres would be to give full and accurate information regarding the various employments in the town and surrounding district, and to afford guidance to parents as to the best educational preparation for any selected line of work. Valuable work in this direction had already been done by the Scottish Council for Women's Trades, which had issued a pamphlet giving full details of the various modes of employment for girls, of the remuneration attaching to each, and of the best preliminary training for each. Such education bureaux, by keeping in close touch with the employment bureaux in large cities, would be able to divert young people from the overstocked trades and professions to those affording greater opportunities of advancement. Mrs. Ogilvie Gordon's scheme is not intended to displace the employment bureaux already in existence, but to provide information of a practical nature before the time for employment begins. The scheme received strong support from the various speakers, and on the motion of Lady Aberdeen it was agreed to bring definite proposals for the establishment of such bureaux before the next meeing of the union.

IRISH.

THE Exhibition and Prize List of the Intermediate Board for the present year was published about the middle of September, and may be summarised thus:—For boys, in the classical course 15 exhibitions were awarded in the senior grade, 13 in the middle, and 23 in the junior; 9 prizes were awarded in the senior grade, 7 in the middle, and 18 in the junior; making a total of 51 exhibitions and 34 prizes in classics. In the modern literary course (Division I., including Irish) 7 exhibitions were awarded in the senior grade, 24 in the middle, and 47 in the junior; 5 prizes in the senior grade, 14 in the middle, and 55 in the junior; making a total of 78 exhibitions and 74 prizes. In the same course (Division II., excluding Irish) 2 exhibitions were awarded in the senior grade, 3 in the middle, and 9 in the junior; 2 prizes were awarded in the senior grade, 3 in the middle, and 7 in the junior; making a total of 14 exhibitions and 12 prizes. In the mathematical course 12 exhibitions were awarded in the senior grade, 18 in the middle, and 13 in the junior; 12 prizes were awarded in the senior grade, 15 in the middle, and 12 in the junior; making a total of 43 exhibitions and 39 prizes. In the experimental science course 15 exhibitions were awarded in the senior grade, 26 in the middle, and 52 in the junior; 13 prizes were awarded in the senior grade, 22 in the middle, and 36 in the junior; making a total of 93 exhibitions and 71 prizes.

FOR girls the figures are:—In the classical course 1 exhibition and 1 prize, both in the junior grade. In the modern literary course (Division I.) 5 exhibitions in the senior grade, 9 in the middle, and 21 in the junior; 5 prizes in the senior grade, 5 in the middle, and 18 in the junior; making a total of 35 exhibitions and 28 prizes. In the same course (Division II.) 13 exhibitions in the senior grade, 9 in the middle, and 24 in the junior; 10 prizes in the senior grade, 11 in the middle, and 18 in the junior; making a total of 46 exhibitions and 39 prizes. In the mathematical course 1 exhibition and 1 prize in each of the three grades. In the experimental science course 4 exhibitions in the senior grade, 7 in the middle, and 10 in the junior; 4 prizes in the senior grade, 6 in the middle, and 6 in the junior; making a total of 21 exhibitions and 16 prizes.

THE grand total of awards is:—385 exhibitions: boys, 279; girls, 106; and 317 prizes: boys, 230; girls, 87. The exhibitions are of three classes: in the senior grade £40, £30, and £20; in the middle, £25, £20, and £15; and in the junior, £15, £10, and £5. As the prizes vary from £3 to £1, there is a very narrow line of demarcation in the junior grade between exhibitions and prizes, and it is not surprising that objection has been raised to exhibitions of only £5, which are insufficient to pay a year's school-fees.

THE chief criticism of this year's results turns upon the Board's interpretation of Rule 36, by which, if a candidate passes in all but one of the necessary number of subjects and obtains between 25 and 30 per cent. in the other, he is allowed a pass if the general average is more than 30. The Board has decided that this shall not apply to English literature and composition. This is a startling decision, as it did so apply last year, and there is nothing in the rules to show that English is excluded from its application. As 1,862 boys failed in English, many of whom would certainly have passed but for the Board's ruling, the matter is serious, and it is not surprising that the Association of Catholic Headmasters has determined to take legal proceedings against the Board's decision.

THE results of the system of courses fail to give satisfaction either to Catholics or Protestants. The Catholics desire its abolition altogether, while the Schoolmistresses' Association points out that its effect has been to discourage classical and mathematical teaching in girls' schools, as girls naturally choose the courses in which it is easiest to obtain rewards. A memorial of the latter association shows that whereas in 1899 and 1900 all girls winning exhibitions (with one exception) took Greek or Latin or mathematics, in 1906 there were twenty-six exhibitioners who took none of these subjects.

THE Committee of the Christian Brothers has also sent a memorial to the Board dealing with a large number of points in which they desire changes. These are: the marking of the English paper, the low value of some of the exhibitions, the rule compelling students who take Irish (except in the preparatory grade) to take another language besides in addition to English, the setting of the

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same paper in experimental science to students of different grades, the absence of reasons for continuing the special prizes for Greek and German, the low results fees in the junior and preparatory grades, the necessity of a special commercial course, the neglect of pass subjects caused by the rule which limits the number of subjects counting for exhibitions, the desirability of introducing manual instruction into all schools, the lateness of the publication of the extracts from the examiners' reports.

THE Department of Agriculture and Technical Instruction has issued an important circular letter amending the regulations for the administration and distribution of grants to secondary schools issued in June, 1905. It is believed that the changes will be of advantage to schools, and will greatly facilitate the arrangement of the school time-table. The changes are in Regulation II., Sections 5 and 6, for which new sections 5, 6, and 7 are substituted. (5) The syllabuses of instruction, first year, second year, third year, fourth year, will correspond with the first year, second year, &c., rates of payment. (6) Grants will be payable in respect of the attendances of any one pupil for not more than two years in the syllabus of the first or second year of the preliminary course, or of the third year of any special course, or for not more than one year of the syllabus of the fourth year of any special course, but payments will not be made for any one pupil for more than five years in all. (7) Grants will not be paid in respect of pupils who are reported by the Department's inspectors as unfit to attend the course in which they have been receiving instruction.

WELSH.

AN important movement has been begun at Cardiff for the higher education of the working classes. The new movement in S. Wales comes "from within." It is an attempt to organise all the forces of the democracy to the demand for higher education for the workers. The delegates at the Cardiff conference included representatives from the Trades' Councils of Cardiff and Newport, the Miners' Federation of S. Wales, the Cardiff Ruskin Society, the Cardiff Co-operative Society, Labour Co-partnership Association, the Co-operative Wholesale Society, the Blaina Industrial Society, the Amalgamated Society of Railway Servants, and numerous educational authorities and institutions, including the University College of S. Wales. The first resolution was to the effect that the conference was of opinion that the higher education of workpeople in S. Wales should be promoted by the formation of sectional Workers' Educational Associations in various centres. One of the workers declared: "It is for the nation to educate us." Principal Griffiths, however, emphasised the real essence of the movement on the ground that it embodied the principle of self-help, and declared that all great movements have sprung from voluntary effort. A committee was appointed consisting of representatives of county and borough education committees, of trade unions, and of educational institutions.

CARDIFF TOWN COUNCIL has passed the recommendation of its Education Committee "That the Principal of the Public Teachers' Centre be instructed to make provision for the teaching of Welsh in the P. T. School, and that Welsh be made an obligatory subject for the entrance examinations to that school on and after May, 1908." The arguments used against the resolution were that this would lead to the exclusion of French, "the language of diplomacy," and that its adoption would prevent Cardiff from becoming a starting-point for the promotion of teachers outside of Wales. On the other hand, it was urged that the Council had made strenuous efforts to get Cardiff recognised as the Metropolis of Wales, and ought, therefore, to be proud to be leaders of Wales in any movement of a national character. Further, Cardiff would thus do its share in producing teachers eligible for any appointment in Wales. The vote for and against the resolution was equal, 17 for and 17 against. The Lord Mayor gave his casting vote in favour of Welsh being made obligatory at the Pupil Teachers' Centre. However, immediate notice of motion was given to rescind the resolution.

SWANSEA TOWN COUNCIL has sanctioned a rate to produce £17,954 for the purpose of the Education Act for the half-year ending May 31st next. The sum does not include any money for the maintenance of the voluntary schools from the rates, and a motion to do so was negatived, only three members of the Council voting in its favour.

THE Monmouthshire Education Committee has decided to recommend the purchase of the present Poor Law Schools at Caerleon, property now used as schools, residence, hospital, and garden, at the price of £4,000, for the purpose of establishing a training college for teachers.

THE Bangor Normal College is one of the colleges established by the British and Foreign School Society. A proposal is to be placed before the subscribers for increasing the accommodation from 70 to 150 students. A further movement, however, is contemplated, viz., for the transference of the college from the subscribers to the local education authority. It is suggested that the college should then be increased so as to make as large a provision "as may be thought reasonable" for all the wants of Wales. The difficulty naturally will be, if the institution is in the hands of the Carnarvonshire county authority, to induce S. Wales to send its present large quota of students, and, on the other hand, to satisfy the Carnarvonshire ratepayer in paying for the expense of students from other parts of Wales. The annual report states that 200 candidates applied for admission during the year. Of this number, ninety-five Welshmen were successful in passing the scholarship examination: first class, nine; second class, thirty; third class, fifty-six. "This result suggested two comments, viz., that the provisions made for the education of teachers before entering a training college were inadequate, and that there was need for increased accommodation in the college if it was to cope at all adequately with the demands which Wales was making upon it." One point is clear. The spirit and vigour with which the new principal has entered on his work will secure rapid progress in the future, if only a satisfactory basis is provided for the college in the organised system of education in the principality.

IT is proposed to summon a public meeting at Cardiff to consider the advisability of organising a pageant on national lines, to take place at Cardiff in 1908, so as to illustrate the history of the Welsh nation. The following tableaux have been suggested:—(1) the Ancient Britons; (2) the Roman period; (3) the Arthurian legend; (4) the Norman invasion; (5) Owen Glyndwr; (6) the story of Llewellyn; (7) the triumph of Henry VII.; (8) the Tudor period; (9) the Royalist and Cromwellian period; (10) a procession representing Carnarvon, Conway, Harlech, Rhuddlan, Aberystwyth, and other historic castles in Wales; (11) Welshmen in foreign lands; (12) a grand final tableau. The pageant would extend over one week.

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L. L.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Phonetic French Syllabaire for Schools. By S. Smith. viii.+80 pp. (Hachette.) 1*s.*—There is much good work in this *syllabaire*, yet we fear Mr. Smith has made a serious mistake in employing a system of phonetic transcription little known in England. It would have made his book much more acceptable if he had adopted the international alphabet, which is now getting well known in this country, and has the advantage of not being applicable to French only, as is the one used in this book. To some of Mr. Smith's statements we take exception. Thus it is obviously misleading to say that "breath issuing from the lungs through the mouth without vibration of the vocal chords produces whispering," for it need not produce any sound at all. The production of a diphthong in Engl. *see* is not due to careless pronunciation. In explaining the pronunciation of the "semi-consonne *y*" (the sound after *i* in *fille*), Mr. Smith says that if the breath-channel for *i* is reduced, being narrowed to the smallest proportions, "voice" becomes impossible. It is hard to understand what is here meant by "voice"; we usually apply the term to the vibration of the vocal chords, and this is independent of the size of the breath-channel. In its usual sense it appears, *e.g.*, on p. 53. Such expressions as "dry and clean in quality" (applied to French *k*) are better avoided. We have noticed few misprints. On p. 65, fourth line from bottom, *these* should be *three*.

Fables de La Fontaine. Avec notes, exercices, et leçons de versification. Par Thomas Keen. 177 pp. (Dent.) 1*s.* 6*d.* net.—This is an interesting edition of forty-one of the famous fables. The only criticism we can make is that the text is surrounded by so many additions that it can with difficulty be discovered. It is a criticism that is often made on edited books; the obvious answer is that a teacher can always omit what he deems unnecessary. At the bottom of each page are notes in French on the unusual words in the text; after each fable are exercises to be answered in French; and after most a *rédaction* or essay to be written, with hints as to its composition. In addition there are short lessons on French versification—a subject that is usually neglected altogether in English schools. Now and again we are given extracts from Taine and other writers who have written on La Fontaine. There are useful appendices on syntax and the difference between the fabulist's French and the usage of to-day, and a sufficient vocabulary. The book has evidently been a labour of love with Mr. Keen; and he might add an introductory note telling other teachers how he uses it himself.

Galland, Histoire d'Ali Baba. Edited by W. G. Hartog. 79 pp. (Rivingtons.) 1*s.*—This book is edited on the same lines as others already noticed, except that in the exercises rather more attention is given to the grammar; otherwise the exercises are rather scanty in proportion to the length of the text. Misprints are not as rare as they should be; thus we have noted *delibéré*, *decouvrir* (p. 18), *etait* (p. 21, p. 32 [twice]), *jusqu'a* (p. 22), *èchappa* (p. 23), *apres* (p. 24), *á* (p. 31), *grace* (p. 36), *e'est* (p. 36), *addressant* (p. 42), *tiré rapporté* [?] (p. 43), *réligion* (p. 47), *cimetiére* (p 54). The vocabulary is not quite complete.

Le Livre des Jeux. By A. C. W. Tillyard. 63 pp. (Blackie.) 1*s.*—The booklet is gracefully introduced by Miss E. P. Hughes. It contains twelve games suitable for fairly young children, by playing which they will gain some fluency. Such means of applying the grammar and vocabulary acquired in lessons are to be commended, and many a teacher of French will therefore be glad of the suggestions contained in this little volume.

French Historical Reader. By H. N. Adair. viii.+138 pp. (Bell.) 1*s.* 6*d.*—A good idea, well carried out. The text has been selected from many sources, and suitably simplified. Some English notes are also supplied; they are brief and to the point. The book makes a very interesting reader. It is all the more to be regretted that the illustrations are not better, and that the vocabulary is incomplete. If it was thought necessary to give the English of *anglais, camarade, compagnon*, &c., there is no obvious reason why such words as *bonheur, boulet, finalement* should be omitted.

Lesage, Turcaret. Edited by W. A. R. Kerr. xi.+105 pp. (Heath.) 1*s.* 6*d.*—It is convenient to have an edition of *Turcaret*, one of the best plays written in the first half of the eighteenth century. The editorial work is, however, disappointing. The introduction is written in slipshod English, as is too often the case in school-books that hail from the other side of the Atlantic. It "makes us tired" (if we may adopt an Americanism) to read such a statement as this: "But what sub-liminal influence this [the delicate psychological play of Marivaux] may have had on the practical mind of the independent Breton is perhaps problematical." In the notes not enough attention is given to peculiarities of eighteenth-century diction.

Classics.

The Aeneid of Virgil. Translated by E. Fairfax Taylor, with an Introduction and Notes by E. M. Forster. 2 vols. 2*s.* 6*d.* each. xviii.+352+363 pp. The Temple Greek and Latin Classics. Edited by G. L. Dickinson and H. O. Meredith.—Mr. Fairfax Taylor's translation has already appeared in the "Temple Classics," and we have reviewed it in these columns; it is here printed, after the fashion of the new series, with the Latin text on the opposite page. The translation is in the Spenserian stanza; it is close and faithful and agreeable to read, a work, indeed, of much skill. We do not think that this metre at all represents the rhythm of Virgil; it can be stately enough, but it is too slow for anything but a more meditative kind of verse. On the other hand, no English metre is free from objections. Readers will, we think, be pleased with the translation on its own merits, in spite of the fault which we have indicated. There is no hint whose text is used of the original. Mr. Forster's introduction gives a sketch of the poet's life and works, with a small dose of literary criticism. We do not at all agree with him that the structure of the *Aeneid* is loose. It seems so to persons who read a book at a time, but a continuous reading gives a different impression. The poet's extraordinary skill in character-drawing, seen in the development of the character of Aeneas, is not touched on; indeed, it is very generally missed by readers, who are looking for something else, but it is subtle enough for George Eliot. The scenes in Olympus, too, are often bits of delicate comedy. Mr. Forster's English style is not faultless, as may be seen from the following sentence: "The art of Virgil seems the wrong way up—if we assume that the art of Homer is up the only right way." The notes explain mythological and other allusions. Each volume has a frontispiece: one an imaginary portrait of Virgil, the other a statue of Augustus.

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Plutarch's Lives: Aristides, Marcus Cato, Demosthenes, Cicero, Lycurgus, Numa. Translated by W. R. Frazer. 234 pp. New Classical Library. Edited by Dr. Emil Reich. (Swan Sonnenschein.)—Because we welcome Plutarch in any reasonable form, we are glad to see this new translation of the Lives; but, as we said in reviewing the first volume, the translation has no special distinction to recommend it. We much prefer a reprint of North, with his mistakes (they are not many) corrected in the notes if desired; but they really do not matter, whereas his style does. How commonplace Mr. Frazer's style is we will show by a few examples. P. 170, "'You, Spartans, are the only women who rule your husbands.' Gorgo replied, 'Yes, because we are the only women who bear men.'" Obviously the first sentence should read "rule your men"; otherwise the point is lost. On the same page, "in a state of nature" is used instead of "naked"; p. 175, "expire beneath the lash" for "die under the lash"; p. 178, "die gamely" for "die game." These are a few examples taken almost at random.

Plutarch's Lives of Coriolanus, Caesar, Brutus, and Antonius in North's Translation. Edited, with Introduction and Notes, by R. H. Carr. xxxvi.+280 pp. (Clarendon Press.) 3*s.* 6*d.*

Plutarch's Life of Coriolanus, in North's Translation. Edited, with Introduction and Notes, by R. H. Carr. xxxvi.+53 pp. (Clarendon Press.)

These are admirable books—they are one book indeed, the *Coriolanus* being the single life without the other three, with its own proper notes and the same general introduction. The text of the Lives is printed from the 1595 edition, on the ground that this is more likely to have been used by Shakespeare than the first of 1579. It is well known that the first editions of sixteenth-century books are generally better than the later editions, because the later were not always revised by the author, but were reprints made under the charge of the printer. In the case of North, we have no knowledge of the edition of 1595; but we know that that of 1631 is very carelessly printed, some passages making nonsense. Mr. Carr has collated the four Lives in edd. 1579 and 1595, and finds only trifling differences, most of them differences in spelling. We are content to accept that verdict, and to assume that the two are practically the same. We do not, however, agree in the assumption that Shakespeare is more likely to have used ed. 1595, seeing that the other edition was in existence, and he may easily have bought that. There is no evidence that North revised the later edition. In this reprint the spelling is modernised, but old forms have been kept—the right principle for an editor, we hold. The notes are very full, and must have cost a world of work. References are given to the text of Shakespeare whenever he borrowed the subject-matter only, and full quotations when he seems to have followed North's language. The literary student will thus be able, for the first time, to estimate Shakespeare's debt to North. In the introduction the same subject is dealt with in a general way, and stress is laid on the scenes and characters due to Shakespeare's creative genius. Justice is done also to Amyot, from whom North translated very literally. It is a healthy sign that these Lives have been reprinted, and we hope that in future Plutarch may be regularly read in schools. This scholarly book is a real boon to the student of English literature, whether young or old.

Junior Latin Syntax. By J. A. Stevens. 56 pp. (Blackie.) 8*d.*—This book does not seem to us to be any improvement on others. It is diffuse, and not always clear. Thus, extent of time and space can best be placed together, as due to one principle and having one construction; but here we have *Duration and Point of Time* in one section, then *Motion to, Motion from, and Rest at* in one section, then *Measure of Space* by itself. Later, when we come to the cases, the *Accusative Case* contains no mention of either space or time. The *Ablative Case, Comparison, Price and Quality*, and the *Ablative Absolute* are all found as parallel sections, whereas the last three are subdivisions of the first. Why, again, is *Quality* put with *Price*? The genitive is included in this section. But there is no principle of order in this book, and it does not justify its existence.

Dies Romani. Short Readings from Latin Literature. Compiled by W. F. Witton. viii.+119 pp. (Arnold.) 1*s.* 6*d.*—This book contains sixty-two extracts, each complete in itself, taken from a large variety of authors—Cicero, Horace, Ovid, Catullus, Martial, Caesar, Suetonius, Livy, Virgil, Pliny, and including, we are glad to see, a few excellent dialogues from Erasmus. The selection is good, and the completeness of the pieces places the book above the usual collections of "unseens." But this book is not meant for unseen translation; we see, to our horror, that this is meant to form the whole Latin reading of the average boy, who is expected to spend "three or four years" over it, and then to do no more. It is thus, in intention, a sort of glorified London-matriculation-book. For a First Reader, however, it is well adapted.

English.

On Ten Plays of Shakespeare. By Stopford A. Brooke. 311 pp. (Constable.) 7*s.* 6*d.* net.—This volume includes ten lectures, and Mr. Stopford Brooke has so high a reputation as a scholar and critic of literature that all that he says in these pages is worth attention, even when his conclusions differ from those one has hitherto adopted. On the subject of Shakespeare's historical plays the author has much to say, and his view that we have in these dramas not only eight separate plays, five of which are complete within themselves, but that these combine to form "one single drama, with a unity of its own, with one subject, with one end to which they look forward, and with one divine justice in them slowly working out its laws to their fulfilment," is carefully worked out. But, of course, this excludes the play of *Henry VIII.*, and to this play Mr. Stopford Brooke devotes no lecture, nor does he even mention it anywhere. While upon this topic of the historical plays, we would, however, draw special attention to the author's analysis of *Richard III.* His conclusions are not wholly convincing, perhaps, but his view is expressed with masterly lucidity, and is to be recommended for further consideration. In dealing with Macbeth, Mr. Stopford Brooke inclines to the view that Shakespeare made of this figure a genuine poet. This estimate is supported in these pages by a careful analysis, and the case for it is perhaps more strongly and judiciously put in these pages than anywhere else in modern criticism; and Lady Macbeth no less is treated in a fresh and original way. The lecture on *Coriolanus* also affords much food for thought, for even when one disagrees most with the author's conclusions they are stated in a way which commands respect and invites further consideration. The book may be warmly commended as a genuine contribution to the highest class of Shakespeare criticism.

Documents Illustrating Elizabethan Poetry. By Laurie Magnus. 221 pp. (Routledge.) 2*s.* 6*d.*—This is capital. Here we have three of the most celebrated works in the

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history of English criticism—Sir Philip Sidney's "Apology for Poetry," portions of George Puttenham's treatise on the "Art of English Poesy," and the greater part of William Webbe's "Discourse of English Poetry"—bound together, and supplied with an admirable and scholarly introductory chapter and useful footnotes. The spelling has been modernised from beginning to end, so that those who take any genuine interest in English literary criticism may now get in a handy form some of the important contributions that have been made to it. At least they may study it in these pages in its earliest aspects; and the most modern of us can hardly afford to treat lightly these Elizabethan treatises, even if he have sat at the feet of Matthew Arnold and Saint-Beuve, or anybody else. We warmly commend this volume, which is an efficient execution of a well-conceived plan, and is likely to confer a distinct boon alike on the scholar and the general reader.

Sir Thomas Browne. By Edmund Gosse. vi.+215 pp. (Macmillan.) 2*s.* net.—In this book we now possess an account of the celebrated physician of Norwich which ought to become popular. There are a hundred people who have read Sir Thomas Browne's best works for two who know anything about him and the course of his life. A biography adapted to the needs of this large class of people has long been a desideratum, and Mr. Gosse's volume is in every way as worthy of its place in the famous series of English Men of Letters, as its subject is in the esteem of thousands who find his style and his thinking welcome enough in these days of curt scientific precision. Naturally, the larger part of this book is concerned with Sir Thomas Browne's works, rather than with his career, which was unexciting enough; but to follow his biographer through his analysis of the series of remarkable books which he produced is a pleasant exercise; and, moreover, Mr. Gosse displays a deep acquaintance with the equipment of what was for his age a singular and remarkable mind. If, as he says, Browne "was less a man of science, an all-round naturalist, than a dreamer of philosophic dreams, satisfied with brief and partial experiences," he nevertheless knows how to subject Browne's intellect to an examination which begets both a sympathy and esteem for its qualities not always given to minds of a much more practical and modern cast. The chapter which deals with the celebrated physician's literary style and use of language is of especial value to all concerned with that phase of education which includes the writing and criticism of essays. To teachers of literature the whole volume may be warmly commended.

Milton's Comus, L'Allegro, Il Penseroso, and Lycidas. xiii.+71 pp. (Longmans.) 9*d.*—An addition to a well-known series of class-books of English literature, which retains all its usual features and deserves praise.

Exercises in Paraphrasing and Analysis. By F. W. Tickner. 42 pp. (Longmans.) 6*d.*—May be recommended for examination purposes. Nothing but examples from beginning to end, but a varied and useful collection of these.

The White Company. By Sir A. Conan Doyle. 192 pp. (Longmans.) 1*s.* 6*d.*—This celebrated story here appears as a school reading-book, having suffered abridgment and adaptation, and being supplied with some useful brief notes and several capital illustrations. It ought to be popular.

The Simpler Poems of William Wordsworth. By E. Hutton. 48 pp. (Dent.) 3*s.* net.—A slight but creditable piece of work, likely to prove useful in junior forms.

Narratives from Macaulay. By Fanny Johnson. xii.+119 pp. *Kingsley's Andromeda.* By G. Yeld. viii.+94 pp. *Shakespeare's Midsummer Night's Dream.* By P. T. Creswell. xx.+92 pp. (Macmillan.) 1*s.* each.—These are additions to the series of English literature for secondary schools which Mr. Fowler is editing with such distinguished success. The story of Perseus is happily prefixed to Kingsley's work, and all three books make good readers.

The Works of Geoffrey Chaucer. Vol. III. 595 pp. (Frowde.) 1*s.* net.—Mr. Frowde is continuing the series of the World's Classics begun by Mr. Grant Richards. This volume contains the Canterbury Tales of Chaucer, and is a marvellously cheap and well-printed and handy edition.

History.

An Advanced History of Great Britain. By T. F. Tout. xlii.+755 pp. (Longmans.) 5*s.*—This is the third of a Historical Series for Schools on the "concentric system," and is intended to meet the practical wants of the higher forms. Prof. Tout is an acknowledged authority on our mediæval history, and therefore teachers may implicitly trust him against any other text-book until well past the Reformation times. But he is also good for later times as well. This book is unusually good on the troubles of the seventeenth century, and is quite up to the level of the best text-books for the eighteenth and nineteenth centuries. It is well supplied with maps and plans. There are no "pictures," but there is an unusual abundance of genealogical tables, not only of kings, English and other, but also of important families, such as the Nevilles and the Pitt-Grenvilles. Each "book" is also supplied with short bibliographies. If our pupils must, as is generally the case, have but one text-book in their hands, we can fully recommend this as one of the most suitable.

Lectures on Modern History. By Lord Acton. xix.+362 pp. (Macmillan.) 10*s.* net.—Among the activities of the late Lord Acton during his too brief tenure of the History Professorship at Cambridge was the delivery of courses of lectures. Messrs. Figgis and Laurence give us in this volume, with an introduction from their own pens, the course on general modern history, as well as the inaugural lecture on the study of history, delivered in June, 1895, and now free from the numerous misprints which disfigured its first publication. Here, therefore, we have some of the work of the master, of him of whom it has been said he could, with the necessary time, have written the whole of the Cambridge Modern History now in course of publication under his auspices. It is not, on the whole, easy reading; and a fair knowledge of modern history is required to understand it. But for those who wish to know what history is, and can be, and who are not afraid of tackling a tough book, we gladly take the opportunity of pointing to one who knows. There are altogether nineteen lectures on European history, beginning with the discoveries of the new worlds in geography and learning of the fifteenth century, and ending with the "American Revolution," *i.e.*, the War of American Independence. There are also two appendices, one consisting of extracts from the letter which Lord Acton wrote to the contributors to the Cambridge Modern History, and the other of those formidable notes to the inaugural lecture, which were added, surely not to explain, but to expand the compressed thoughts of the public deliverance. Here we would gladly end our notice, but we are encouraged by the professor's own words (p. 24) to add a word of criticism on a small point. In the lecture on

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the Puritan Revolution (pp. 200, 201) Lord Acton describes the Independents as opposed to any established Church. The opinion is modified at the beginning of the next lecture (p. 206), but not quite far enough in our judgment. Independents were not logical, and did not carry their principle to its full extent. They believed in a State Church, and opposed such institutions only when they were opposed to them in theology or methods of government. Again (p. 212), we wonder to find a statement that the Dissenters in 1672 refused to accept the offers of the King to release them from statutory disabilities. On the contrary, there were many places and persons licensed under the Declaration of Indulgence of that year, lists of them being now easily accessible.

General History. By P. V. N. Myers. xv.+779 pp. (Ginn.) 7*s.* 6*d.*—This is a revised edition of a work published seventeen years ago. It contains in outline the history of the world from prehistoric times almost to the present day. It is of the now well-known nature of American books, clearly printed, well illustrated, and impartially written, making a good introduction to world-history.

Mathematics.

A Heuristic Arithmetic. By Clifford Granville and C. E. Rice. Part I. (Method). xxii.+129 pp. Part I. (Examples). ix.+100 pp. Answers to Problems in the Examples Book. 43 pp. (Horace Marshall and Son.) 2*s.* 6*d.*—This work has impressed us as a very noteworthy addition to the text-books of arithmetic. It is, on the one hand, evidently based on actual practice with young pupils; on the other hand, it is the outcome of a very careful study, not only of the nature of the processes of arithmetic, but of the nature of the child mind. Though we do not quite see our way to accept in its entirety what may be called the psychological basis on which the authors proceed, we think the book is so rich in suggestiveness that we would earnestly recommend the study (not merely the reading) of the "Method" to every teacher. It is impossible in a short notice to outline the position taken up, but we are certain that every teacher would benefit by studying the book, even if he dissented from the particular methods expounded in it.

Pitman's "Method" Arithmetics. Part VI. 56 pp. (Pitman and Sons.) Paper, 4*d.*; cloth, 5*d.* Answers to Part VI. Cloth, 4*d.* net.—The subjects taken up in Part VI. include practice, proportion, and fractions, in continuation of earlier work, and also simple interest and mensuration. Great pains seem to have been taken to make the questions quite definite; at times the accuracy implied is in excess of what could be obtained in practice, but one may hope that the teacher will occasionally direct attention to the limitations of accuracy necessitated by practical work.

Arithmetical Exercises for Junior Forms. Book I. By R. B. Morgan. viii.+78 pp. Answers, xxvi. pp. (Black.) 1*s.*—The collection is divided into two sections; the first contains examples on the simple rules, while the second takes up measures of money, weights, &c. Attention is given to short methods and to tests of accuracy.

Arithmetic for the Preliminary Certificate Examination. By R. H. Chope. viii.+360 pp. (Clive.) 2*s.* 6*d.*—This book is stated to be a small edition of *The Tutorial Arithmetic,* adapted to the requirements of the preliminary certificate examination. The more difficult portions of the higher work have been omitted, and the collections of examples modified, but the method of treatment has been usually retained. For the special purpose for which it is written the book seems to be well suited.

The Rational Arithmetic. By George Ricks. (Macmillan.)—This work is said to be constructed in accordance with the "Suggestions" issued by the Board of Education in 1905, and with the Code of 1906. It is divided into six parts or courses, each course providing material for one year's study; of each course there are two forms, one called "Scholar's Book," the other "Teacher's Book." The latter contains the Scholar's Book, with the answers attached to each question, and also a number of suggestions to teachers as to method, more especially for practical work, together with typical examples worked out. The preface to the Teacher's Book strongly recommends the practice of working from the books; with this practice and with the reasons urged in its support we are in hearty sympathy. So far as we have been able to test them, we think the several books to be very well adapted for the purposes for which they have been written, and we consider them to be worthy of the consideration of teachers. The books are clearly printed on good paper, and are bound in paper covers. The price of each of the six Scholar's Books is threepence, and that of each of the six Teacher's Books eightpence.

Arnold's Shilling Arithmetic. (Without Answers.) By J. P. Kirkman and J. T. Little. viii.+184 pp. (Arnold.) 1*s.*—The book does not seem to be meant for the use of absolute beginners; an introductory chapter reviews the fundamental operations in a somewhat hasty manner, and gives various results on the divisibility of numbers, square and cube roots, and index notation. Decimal fractions are taken up before vulgar fractions, and abbreviated methods of operation come at a comparatively early stage in the course. In addition to the usual material of school arithmetic, the book includes a chapter on the simple equation in one and two unknowns and another on graphical methods; an excellent chapter on areas and volumes contains applications to the circle and cylinder, but, curiously enough, does not mention the sphere. The volume contains numerous exercises.

Longmans' Complete Arithmetics, Mental and Practical. Scheme B. Book VIII. 103+16 pp. (Longmans.) With answers, 1*s.*; without answers, 9*d.*—This addition to the series of "Complete Arithmetics" is issued to meet the needs of pupils in day and evening continuation schools who require work of a more advanced and practical character. Contracted and graphic methods are freely used, and elementary algebra is also employed. A large portion of the book is devoted to mensuration, and contains numerous examples illustrating the principal formulæ for the common plane and solid figures. A large number of examples selected from various recent examination papers is given at the end of the book.

Science and Technology.

Catalogue of Mechanical Apparatus.—Mr. G. Cussons, of the Technical Works, Broughton, Manchester, has published a new catalogue of apparatus for the teaching of experimental mechanics and practical mathematics. The list of experiments in mechanics appears to be very complete. In particular we notice the Tripod and Capstan Block System, which seems suitable for laboratories and class-rooms where space is a consideration; also the numerous dynamical contrivances, in which the vibrating spring and paint-brush are freely employed for measuring time. Those who, like the present writer, have used

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Mr. Cussons' apparatus with classes of boys, must have been pleased with its strength and neatness; its appearance commands respect, and its strength is proof against accidents. All of it seems to bear the stamp of experience, and much of it has been evolved out of the work which has been done at the Naval Colleges. Teachers of mechanics are not all in agreement on the question of apparatus; some advocate extreme simplicity, others complexity; but all unite in condemning flimsiness. The work described in this catalogue is free from any possible charge of this nature, and school laboratories which cannot afford to be extensive purchasers of apparatus, and prefer to make their own, will find a few examples of Mr. Cussons' workmanship quite worth having. We commend the catalogue to the consideration of teachers.

Illustrated Catalogue of Mathematical Drawing Instruments, &c. Manufactured and Supplied by W. H. Harling, Finsbury Pavement, London, E.C. 64 pp.—Mathematical instruments to suit every requirement of school or college are included in this catalogue, from presentation cases at £25 down to sets which cost only a few shillings. Boxes of drawing instruments used in various public schools are also illustrated, as well as a variety of scales, rules, and other accessories required for practical work in geometry. A copy of the catalogue should be obtained by teachers seeking mathematical instruments suitable for accurate constructions and measurements, at a reasonable price.

Messrs. J. J. Griffin and Sons, Ltd. (Kingsway, W.C.), have issued new editions of the *"M" List* and of *Part III.* of their catalogues of physical apparatus. The former is restricted to measuring apparatus and materials, mechanics, and meteorology, and the latter to apparatus required in the subjects of magnetism and electricity. Both lists interpret very faithfully the wide range of apparatus which is now available for the teaching of physics; they are well illustrated, and useful tables of physical constants are inserted at the end of each list.

The Life of Pasteur. By René Vallery-Radot. Translated from the French by Mrs. R. L. Devonshire. ix.+484 pp. (Constable.) 7*s.* 6*d.* net.—By his lovable life, by his scientific researches, and by his conquests of disease, Pasteur has earned the blessing of the human race for all time. Let this brilliant story of his career be placed in every library, so that all may have the opportunity of learning how he reached immortality. Deeds of derring-do appeal to the savage instinct in us, but the work of Pasteur commands our higher admiration, because it has saved tens of thousands from disease and death while war has slain its thousands. We cannot conceive of a better biography to stimulate the reader to noble aspirations.

Elementary Chemistry. Progressive Lessons in Experiment and Theory. Part II. By F. R. L. Wilson and G. W. Hedley. xix.+382 pp. (Clarendon Press.) 5*s.*—The authors must be congratulated on having produced a course of practical work which justifies the expectations raised by their introductory volume (noticed October, 1905). Their scheme of work is eminently sane, and will appeal to all teachers of the subject. They endeavour to force the pupil to think logically, and thereby to cultivate a scientific habit of mind. Especially do they try to prevent premature generalisation—the snare of elementary science teaching. While adopting the modern method of individual research, they attempt to relieve the teacher of the increased burden of work occasioned by it. The instructions for practical work are preceded by a series of questions, so that the student may collect his knowledge of the subject and discover its limitations. Hints as to form to be taken by the pupil's notes are followed by a discussion of the facts which have been observed, with a historical account of their original discovery. The authors claim originality neither for the subjects dealt with nor for practical details, but rather for this attempt to save the teacher's time "so that he may be able to insist that each member of the class shall think about and interpret the experimental results." One drawback must be mentioned. In the theoretical discussion which follows each exercise, the facts are so far given that the idle or dishonest worker may easily read ahead and thus save himself the trouble of independent thought and observation. The course includes combustion, the atmosphere, neutralisation, hydrogen, and water. Theory is introduced—too early in the opinion of many—by experiments on diffusion and electrolysis. Chapters follow on atomic weights, and on carbon, chlorine, nitrogen, sulphur, and their compounds. The book is splendidly printed and bound; although the price of the complete course may prohibit its introduction into most secondary schools, it is worth the careful study of every teacher of chemistry.

Introductory Practical Physics. By Prof. W. F. Barrett and W. Brown. New edition. 284 pp. (Sealy, Bryers, and Walker, Dublin.) 2*s.* 6*d.*—The first edition of this volume was published in 1892, and the new edition is practically a reprint of this, except for the correction of a few typographical and other errors. The course extends over a wide range of experimental work on the measurement of space, time, mass, fluid pressure, force, the mechanical properties of solids and fluids, and the molecular properties of fluids. The necessary mathematical demonstrations required in the more important experiments are included in an appendix. For the most part, the experiments are of an advanced character, and require somewhat elaborate apparatus. A student working in a well-equipped laboratory will find the volume of much use during his second year of a degree course.

Miscellaneous.

Studies in the Sermon on the Mount. By Rev. the Hon. E. Lyttelton. x.+392 pp. (Longmans.) 12*s.* net.—The sincerity of this book is obvious, and it presents a pleasing contrast to the too numerous works of dogmatism which feed the mawkish sentimentality of this country. It is an attempt to examine the Sermon on the Mount in the light of simple common sense, and to see what it really means for our daily life. Mr. Lyttelton has not been able wholly to shake himself free from the predispositions of his cloth; thus he says: "From one point of view the Sacraments are essential to salvation, from another not" (p. 52). We do not think that He who uttered the Sermon on the Mount would have said that any Sacraments are essential to salvation. So again (p. 64): "In a subject so wrapped in mystery one feels that the logical clearness of any theory would be a distinct sign of its inadequacy and falseness." But the wonder is, not that he should have failed to keep himself wholly clear of bias, but that he should have been able to do it at all. At a time when "logical clearness" is the last thing we expect from a dignitary of the Church, when everyone seems afraid to speak out his opinions if he has any, we welcome most heartily this sincere book. Mr. Lyttelton is not afraid to say that the relations of states

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and peoples cannot be governed, as things now are, by the same laws as those of private persons (p. 73), and he analyses the causes with insight. His interpretation of "those who are persecuted" to include those who are neglected, or disliked, because of real blemishes, this "persecution" working out by degrees an improvement of character, is fresh, and shows a real sympathy with human frailties. His general line of interpretation is, that Christ sets forth in paradoxical or exaggerated form great principles of conduct, but that the Christian has to apply them; he must himself decide his problems of conduct, and the continued decision of these problems on these principles gradually educates him into something nearer to what he ought to be. The book is thoughtful, and suggests thought, and it may be recommended to our readers.

MESSRS. NOVELLO AND CO. have sent us a parcel of musical publications intended, in various ways, for scholastic use. Three operettas are: *The Bee Queen* (1s.), by Alfred Moffat; *The Court Card* (1s. 6d.), by C. Hart-Davis; and *The Babes in the Wood* (2s.), by G. Jacobi. All of these are attractive, both from the musical and the dramatic points of view. All provide interesting solo parts and effective work for a chorus, and all supply opportunities for the display of pretty dresses and scenic effects. The first two are very simple; Mr. Jacobi's work is more ambitious, but should not be out of the range of child-performers who have been adequately trained to sing in parts. *A Garland of Songs for Children* (Set I., 6d.), from "Novello's School Songs," contains a good collection of national airs adapted by Dr. McNaught for unison singing. Elementary-school teachers sometimes appear to find it difficult to provide suitable songs for their classes, and occasionally (with the aid and suggestion of inspectors) take refuge in the banalities of musical comedy; collections of this kind should help them to a right choice in the matter. Sir John Stainer's *Choral Society Vocalisation* ("Instructions and exercises in voice-training to be used at ordinary rehearsals"), in four volumes, price 6d. each, are exercises of a sufficiently interesting character to enable conductors to inflict them upon their choral societies without much fear of a rebellion. They can mostly be sung with real pleasure, and should be very valuable as aids to good voice-production and accurate intonation. These exercises are issued among "Novello's Music Primers," as also is Miss Emily Daymond's *Score-reading Exercises* (1s. 6d.). This book comprises forty-eight specimens of good four-part contrapuntal writing, with C-clefs for alto and tenor. The exercises are about eight bars in length and are varied in style. Any student who has read them carefully through at the piano or organ ought to find himself efficient in the art of reading from four-part score.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Matriculation at the English Universities.

MR. CHARLES'S article in the October issue of THE SCHOOL WORLD brings into prominence the way in which universities are accepting each other's matriculation certificates. So much the more prominent becomes the millstone still hanging round the necks of teachers and scholars alike at the bidding of the University of London and the group formed by the Universities of Manchester, Liverpool, Leeds, and Sheffield. The London Matriculation and the Joint Matriculation of these northern universities are not interchangeable. The resulting inconvenience to schools is enormous and obvious.

Oxford and Cambridge accept the London Matriculation (under certain conditions); Oxford and Cambridge accept the Joint Matriculation (under certain conditions); but London does not accept the Joint any more than the Joint accepts London.

Surely the teaching profession can put pressure on these universities and prevent them perpetuating the fallacy that things which are equal to the same thing are *not* equal to one another. ARTHUR ROWNTREE.

Bootham School, York.

Science in the Common Examination for Entrance to Public Schools.

MAY I request a little space in order to plead for a reform in the elementary science papers alternative with Latin verse, set at the common examination for entrance to public schools?

I have before me some of the series taken at random. One paper consists of part i., mechanics and hydrostatics, and part ii., botany—the latter plain and straightforward, it may be admitted; in another one notices reference to the claws of a cat or dog, full moon, metals of railway lines, barometer, and stratification of rocks; again, a third takes the physiological side of botany, the range further including caterpillars and their jaws, birds and their eggs, and questions on physiography. Such variety might meet the requirements of a paper on general knowledge in elementary science, but I would submit that teachers are thereby discouraged in their endeavours to give their pupils a systematic and efficient training in elementary science, such as would lead up to the work of the modern side in a public school.

I would therefore urge that, following the example of other examining bodies, a good syllabus should be drawn up, so that candidates need not depend on the various odds and ends picked up promiscuously in or out of school. And, after all, this would be only fair, for Latin verse is a clearly defined subject; there is no mistaking the road to Parnassus; the track is well beaten, and there are plenty of sign-posts. But while I am convinced that there can be no desire to discountenance science by a flank attack, yet, as the matter stands, this concession to modern tendencies is, to all practical purposes, a dead letter, for one can well conceive boys being carefully prepared in this subject and nevertheless finding themselves confronted by a paper containing a minimum of questions bearing upon their tentative curriculum. E. J. PETITFOURT.

Brighton.

Apparatus for Experimental Mechanics.

I HAVE read with great interest the paper on "The Teaching of Mechanics by Experiment" read at the recent meeting of the British Association, and published in THE SCHOOL WORLD for September. During the last three years I have been engaged in working out in the laboratory a course of mechanics suitable for secondary-school pupils of from fifteen to seventeen years of age; and I am at present putting the finishing touches to a text-book upon the newer lines embodying the results of my work and experience in the matter.

Every teacher of mechanics knows that the great want in the subject is a course of experimental kinetics and

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kinematics; we require actual laboratory studies of the motion of typical systems, such as the falling body, simple pendulum, fly-wheel, projectile, &c. Every teacher also knows that the stumbling-block in all such experiments is the difficulty of the accurate measurement of small time intervals.

All sorts of attempts, save that of direct attack upon the problem, are made to surmount this fundamental obstacle. In Atwood's machine coincidences with the vibrations of a seconds pendulum are employed, and in Fletcher's trolley the device of a vibrating spring, marking waves upon the moving body itself. Now, why should not the problem be solved by direct attack, viz., the employment of some accurate time-measuring apparatus, such as the electric chronograph? In most secondary schools some elementary teaching in electricity is now given, and the principle of the chronograph involves nothing more than the properties of electromagnets, such as are exemplified in the common electric bell. If the chronograph employed be of the tuning-fork type, a preliminary lesson upon the tuning-fork will supply all the necessary explanation, and, incidentally, sound waves furnish a typical example of uniform linear motion. Taking for granted that the employment of a chronograph is desirable, it may be applied to the direct determination of time in the motion of the falling body, the pendulum, and the fly-wheel, and also in apparatus to prove Newton's Laws of Motion, &c. The device adopted to secure signals throughout the motion investigated is a matter for the particular motion, and is not difficult to arrange in special cases.

Mr. W. D. Eggar, in his text-book on "Experimental Mechanics," asserts that "the electrical appliances for releasing the falling body and taking the time are sometimes found troublesome." It will be found in practice that they are less troublesome than is currently believed; nine-tenths of electrical troubles arise from bad contacts or similar small errors of manipulation. In any case, the advantages obtained from direct measurement and from the employment of one standard instrument, the chronograph, throughout a series of experimental studies, are worth some small exertion to obtain.

Mr. Fletcher's trolley apparatus described by Mr. Ashford, and also by Mr. Eggar in the work alluded to above, is not perfectly satisfactory in practice. When used for the experimental illustration of the Newtonian law $F = ma$, it suffers from the cardinal defect that part of the impressed force is rotating the wheels instead of producing a pure linear acceleration of the moving system. Further, when the load on the trolley is varied the centre of gravity of the moving system is altered, and if the line of the string passed through the C.G. formerly, it no longer does so; here again error is introduced. It appears to me that an apparatus embodying the chronograph is desirable, which will measure the times, and hence the velocities and accelerations, of a moving system in a more direct and accurate manner. When it is attempted to obtain absolute results from the trolley apparatus its defects become apparent. In a footnote to a section on the determination of g—the result being 975—Mr. Eggar says that "the error is usually more than in the instance given." I venture to assert that errors of 20 per cent. are not unusual in actual work, and that, in fact, the apparatus is quantitatively not in advance of the familiar Atwood's machine of our early mechanical studies. At the same time, the alteration in wave-length as the trolley speeds up is a valuable visual illustration of acceleration, and one of the best features of the trolley apparatus.

I am convinced that the attention of physics masters needs only to be directed to the problems of laboratory mechanics to furnish us with a store of experimental illustration on the subject. I am equally convinced that some form of time-measuring apparatus will be necessary for general application in practical kinetics. It is in the hope that other teachers will contribute their views and experience that I venture to trespass upon your valuable space with the present communication.

Huddersfield. JNO. SCHOFIELD.

Pictures for Schools.

YOU frequently point out that when the education "question" has been dealt with we shall still have a good deal to do for education.

Among the objects which have to be aimed at in order to brighten the school life of our children is the selection of satisfactory pictures for the walls of the schoolrooms. In many schoolrooms too little has been done in this way.

Not a few excellent pictures have been published and provided, but in many cases they are too small. We seem to need more really large-size pictures, inexpensively reproduced, like posters in good colour, which would occupy the upper part of a school wall and serve the purpose of a frieze on a large scale, which the children could see easily from any part of the room. An experiment has recently been made in this direction which may interest some of your readers. With the help of an experienced artist a historical set of ships has been painted. There are three panels—namely, Viking ships, Armada ships, Trafalgar ships. Each panel is about 5 ft. 6 in. by 3 ft., so that the set occupies a space of 16 ft. 6 in. by 3 ft., which will be found vacant on the upper wall of a good many schoolrooms.

There may be some educational authorities who would care to know of these pictures, which seem to me to be excellently fitted for their purpose. In addition to their decorative value, they should help in some degree to encourage an interest both in our history and in our Navy.

I have a certain number of single panels which I shall be glad to send as specimens to any secretary of a county or borough educational authority, who may care to write to me, until the number is used up, or I can give further information about them.

ARTHUR H. D. ACLAND.

2, Weaponness Park, Scarborough.

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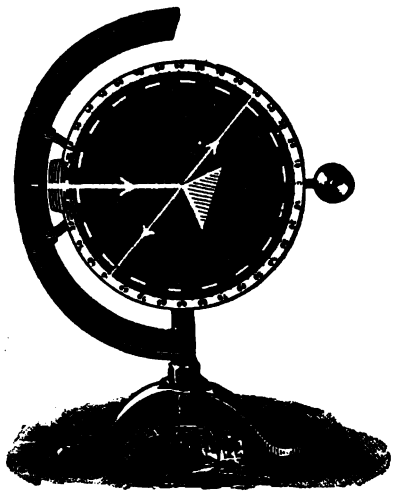

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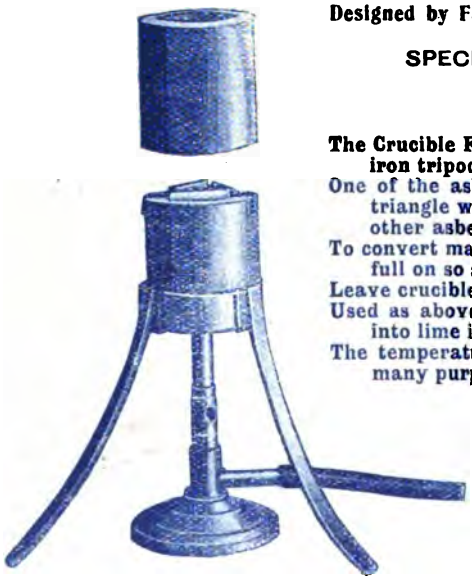

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THE BEST AUTHORS FOR SCHOOL READING.

By JAMES OLIPHANT, M.A.

IT is admitted that, during the years of secondary education at least, young people should study their own language, not merely for the utilitarian purpose of learning to speak and write it with ease and correctness, or for the general training of the intelligence that may be afforded by the analysis of its structure, but also for the higher end of attaining an appreciation of its literature. There is no need to enlarge on the value of such a study, but it will be well to distinguish some of the effects that may be expected from it, since the methods of teaching must be influenced thereby. First, there is the stimulus to thought and imagination that must follow from direct contact with a master-mind. Secondly, there is the enlargement of the mental horizon produced by the incidental wealth of expression and allusion. Thirdly, there is the elevating appeal to the æsthetic sense that is made by all genuine works of art. Every piece of true literature will minister more or less to these three ends at once, and perhaps it is not always profitable to seek to separate the different effects, but some discrimination is required when an adjustment has to be made to various stages of advancement.

It may be said at the outset that difference of age, as representing broadly the periods of mental development, is the only difference that has any claim to be taken into account. No useful purpose will be served by varying the school reading according to sex; what is good literature for boys from twelve to nineteen years of age is equally good for girls, and *vice versa*. Still less reasonable would it be to try to determine the choice by the social status or the economic prospects of the pupils. It is the birthright of all to enter into the full heritage of their country's literature, without being made subject to any artificial restriction. What, then, is to be the principle of selection, and what is to be the mode of treatment adopted, to secure that the three chief ends specified above may be most perfectly served at each stage in school life?

For practical purposes it will be enough to consider the secondary course as divisible into three periods. During the first year or two it is a question of introducing the pupils into the realm of literary art by the easiest and pleasantest paths. In the middle period a somewhat more sustained interest may be counted on, and a more strenuous study can fitly be demanded. At this stage, moreover, some compromise of a complete scheme is sometimes called for, in view of the fact that the school education of many pupils will not extend beyond their fifteenth or sixteenth year. Those who remain to the end of a full secondary course will in its later years be able to enter into something like the measure of appreciation of literature that is possessed by the independent student, and the task of the teacher will be mainly directive.

At about the age of thirteen the boy or girl will probably be promoted from the reading of miscellaneous extracts and selections, or of narratives that have been specially simplified, to the study of literary works of art in their entirety, and at this period it is of the highest importance that the choice of material and the methods of teaching should be such as to secure a maximum of interest. If the youthful student is not attracted at the outset, there is great risk that all his later work in literature will have too much of the character of drudgery to fulfil its purposes, and that the habit of private reading will never be firmly established. But attractiveness is not, of course, the only requisite. Some teachers, in their anxiety to make sure of it, begin with a sensational story like Stevenson's "Treasure Island," which, in spite of its skilful construction and graphic style, has none of that elevation in subject or tone that could alone make it educative in the highest sense. The purely narrative interest should not be so absorbing as to withdraw attention from other kinds of appeal. It is well to take every opportunity of quickening the historic consciousness, so that a story of the past is to be preferred to one that deals with modern conditions of life. But while the setting may with advantage be taken from bygone times, the point of view and the treatment should not, in the case of beginners, be too alien from those that belong to our own day.

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The barrier that separates us from the outlook and sentiment of former centuries cannot be surmounted at a bound. Young people must be prepared for such a stretch of imagination and sympathy by a preliminary experience of presentations that are, in part at least, familiar.

For continuous class reading in the early years of a secondary course there can be no better material than historical romances in prose and verse, and Sir Walter Scott is the writer *par excellence* for this period. Stories like "Ivanhoe," "Quentin Durward," or "Kenilworth," and poems like "Marmion" or "The Lady of the Lake," may not be ideal as artistic products. Their accuracy, both as to colouring and as to facts, is not above reproach, and they can hardly be regarded as models of style. But these defects are of little moment in comparison with their recommendations for the purpose in view. They are acknowledged classics; they open up vistas of the past as seen through the eyes of the present; they have the frankly objective, impersonal, unsophisticated outlook upon the world that is natural to youth; they create a thoroughly bracing moral atmosphere; and they have the romantic glamour that sustains imaginative interest.

After a year or two of Scott it is time to try something more solid and serious in prose, and to suggest a higher standard of workmanship in poetical literature. Fiction may give place to biography or records of travel. At this stage nothing could be better than works like Southey's "Life of Nelson," or essays such as Macaulay's on Warren Hastings, or Clive, or Frederick the Great. The cultivation of the historic sense should by this time have given birth to the desire for a closer knowledge of actual fact, and this may most fitly be gratified in relation to the life-work of some striking personality, for it is as yet too early to expect any strong interest in views of life that imply a critical or philosophical attitude. The directness and force and brilliance of Macaulay's style are eminently suitable for this period of introduction to what may be called solid prose reading.

For the readings in poetry, which should always, so far as possible, be taken along with prose, there may be suggested here Tennyson's "Idylls of the King," or some of the tales from Morris's "Earthly Paradise." Such works would serve to maintain the imaginative interest in significant fables and legends of the past, while affording the help to understanding that is involved in a point of view not too remote from contemporary culture. Moreover, the subtler tone of reflection, and the more modern cast of sentiment, that are characteristic of these writers, are in keeping with the temperament of boys and girls who are approaching the years of a conscious personal life. This is the time also to impose a standard of literary technique that would have been premature at an earlier stage. The beauty of Tennyson's versification can now be appreciated in some degree, and will do much towards developing a refined taste and a sense of perfection in composition.

The fairly common practice of introducing plays of Shakespeare to pupils of fourteen or even less cannot be approved. This is not the time for them. There is, of course, a great deal in such a play as "Julius Cæsar," or "Henry V.," or "As You Like It," that may be understood and enjoyed even at this early age, but not even these can be appreciated with any fullness by such youthful readers, and it is a great pity to forestall the impressions that they would make at a later stage. Let them be introduced to Shakespeare through the medium of Lamb's "Tales," and postpone the direct study of the greatest treasures of our literature until their intelligence is somewhat riper. A premature beginning will only dull the edge of appetite, and may even create a distaste that will never be wholly overcome.

Shakespeare may be read with advantage at any period of the school course from the age of fifteen or sixteen onwards, if the simpler historical plays be taken first, and he may well be made the *pièce de resistance* for poetical reading during the middle portion of the secondary curriculum. By this time there has been enough study of the language to make it possible for the pupils to grapple with the difficulties of expression that are peculiar to Elizabethan English, and it will be well for them to gain a wide acquaintance with the Shakespearian plays before passing in the final years of their school life to the study of authors belonging to still earlier centuries. The prose reading for this middle period should still be taken from comparatively modern authors—not going further back than the time of Addison and Swift—and it might with advantage be largely occupied with the study of essays of a critical and reflective type. Of the many authors who could be laid under contribution, mention may be made of Charles Lamb, De Quincey, Carlyle, Leigh Hunt, Emerson, and Lowell. These are all stylists who have sounded a distinctive note in literature, expressing a certain philosophy of life, and their writings have the further advantage that they abound in illustrative allusions, the study of which may be made an education in itself.

The last two years of a full secondary course in English literature are naturally devoted to a more systematic and historical study of our great authors than it was advisable to attempt at an earlier period. It is now possible to rely confidently on an interest that is independent of adventitious aids, and to assume the necessary linguistic preparation for attacking any writings from the fourteenth century onwards. Beyond the period of Chaucer and Langland it is not desirable that general students in a school course of literature should seek to penetrate. If opportunity permits, there will be a distinct value in framing a chronological scheme for this final stage, including works representative of the outstanding periods of our literature. As there are

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no special limitations that need any longer be imposed in the choice of material, the range will be fairly wide; but even if regard be paid only to literary excellence, historical significance, and permanent interest, it will be found that the writers from whom a complete work suitable for continuous reading can profitably be taken are not very numerous. In an extended course most of the following might find a place—Chaucer, Spenser, Shakespeare, Milton, Dryden, Bacon, Addison, Swift, Pope, Gray, Goldsmith, Burke, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, not to mention authors of a later date. It is, of course, understood that short illustrative pieces from other writers, especially the poets, will be brought under the pupils' notice.

Even this limited list may be considered a counsel of perfection, and where time does not permit of much purely literary study, the advice may be given to concentrate attention largely on Chaucer, so far as poetry is concerned, provided that there is already some familiarity with several of Shakespeare's plays. There is no work more profitable, from every point of view, for advanced school reading than "The Canterbury Tales." If this be taken to represent the earlier phases of our literature, the accompanying prose reading may well be chosen from writers of the eighteenth century, when English prose began to take definite form.

THE REFORM OF LATIN TEACHING.

By W. H. S. JONES, M.A.
Perse School, Cambridge.

I.

THE examiners in the Oxford Local Examinations of July last, in commenting on the Latin of the Senior candidates, make the following remarks:—"The easier Latin prose was, as a rule, poorly done, and it is quite clear that candidates should have more practice in doing such proses without dictionaries and grammars. The old system of learning grammar rules and exceptions has apparently been abandoned, owing to new theories of learning languages. But the result is somewhat disastrous, and the great majority of these exercises were disfigured by such mistakes as *senatus* feminine, *pars* masculine, *cibus* neuter, *corpus* masculine, and so on."

It is beyond dispute that mistakes in gender, not to mention more serious errors, of such a kind as to argue lack of clear thinking and not mere ignorance or failure of memory, are much more common now than they used to be. But it is, to say the least, extremely doubtful whether "new theories of learning languages" are the cause of the trouble. In the first place, it would be interesting to know how many of the students examined by the Oxford examiners had been taught on the new method from the beginning. Certainly there were few, probably none. In the second place, "the new method," to call it by a name which is rather objectionable, insists, and insists strongly, on the necessity of learning grammar thoroughly, both accidence and syntax. It differs from the old method in two respects only:—

(1) Grammar should, in the first instance, be taught *pari passu* with the use of the language in oral and written speech. Summaries of grammar, arranged in a logical order, should be postponed to the second or third year.

(2) The only parts of grammar which can safely be neglected are those which deal with unimportant exceptions. The genitive of *supellex* may well be postponed until the word occurs in the form reader.

The fact is that the reformers of method are striving to secure thoroughness and accuracy (*a*) by saving time, and (*b*) by a procedure which is both logical and psychological. They are seeking to avoid the mistakes which are noticed by the Oxford examiners. The real cause of the trouble is lack of time. With the old, slow methods, very little Latin can be taught under modern conditions; the reformers are trying to make the diminished time devoted to Latin yield the maximum of results. But the question naturally arises whether really satisfactory results are possible in the time which can be spared. Two difficulties are in the way, about which I should like to say a few words, since, in my opinion, they go to the root of the matter. For the sake of clearness I will state them at once.

(1) Reformers are not united, and have few means of making known their difficulties and the results of their experiments.

(2) The curriculum of the lower forms is so overcrowded that boys rarely gain a really adequate knowledge of any subject. They do not learn what accurate, precise thinking is, and they do not know how to work for themselves.

Before the new method can be a real success, before it is possible to judge what it can achieve and what it cannot, many experiments must be made. These experiments, and their results, must be discussed and criticised. Up to the present very little has been done, and, so far as I know, no results have been published in English except my own little work on "The Teaching of Latin" (Blackie, 1s.). The Classical Association occupies itself with the general principles of reform. But these are well known and scarcely disputed. But the details of method, and these details are all-important, are an unworked field. The few who are working on new lines are groping in the dark. They do not know where to look for aid; text-books are few, and usually compiled by men who do not see the difficulties and pitfalls of their subject. I believe that real progress is impossible unless thoughtful and systematic experiments be made, published, and criticised. I hope to return to this point in a subsequent article.

I must spend a little more time upon what I call the second difficulty. The desire to avoid early specialisation, a desire with which I am in hearty sympathy, has resulted in a most fatal error. Many subjects, perhaps too many, are

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included in modern curricula for boys between the ages of eleven and thirteen. But, so far as I can learn, very rarely is an attempt made to make sure that, in one subject at least, really serious work is undertaken and accomplished. Perhaps the greatest advantage of the old classical training was that the boys learnt one thing thoroughly. They knew what hard work meant; they knew what accuracy and precision meant; they had learnt to work for themselves; by mastering one subject thoroughly they were made acquainted with principles of logic which enabled them to attack other subjects in a business-like way. Above all, they were impressed with an ideal of excellence, which they carried to their other work; and they were, in consequence, dissatisfied with hazy knowledge, inaccurate thinking, and careless expression of their thoughts.

Now all this is changed. I think that I shall not be contradicted when I say that most young boys wander from one subject to another until their brains are in chaotic confusion. They learn no subject really well, or, if they do, it is one in which memory, or unconscious knack, is the only requisite for success. They do not learn to think with accuracy and precision. Of course, my remarks do not apply to every school. There are many where the boys are made to think. But in most cases I find that my own view is corroborated by the judgment of examiners and inspectors, with whom I have often discussed the subject. Now it is this modern plague of inaccuracy, this need of precise thought, which ruins a great deal of the work in most subjects, making the teaching of Latin a Herculean task and, in many cases, a virtual impossibility. Habits of inaccurate thinking are brought into work where absolute precision is indispensable. If a large portion of the time-table were devoted to Latin, these faults might be eradicated by the strict discipline enforced by the learning of Latin, but three or four hours a week are not sufficient. If that is all the time which can be allowed, the pupil must come to his work better prepared.

What can be done? To return to the old, one-sided, classical training is impossible, even if it were desirable. The remedy that I suggest is that the curriculum be reduced during the years eleven to thirteen, at which latter age I would begin the teaching of Latin. The curriculum should, at first, be narrow. It should then widen for two or three years. Specialisation can be begun with advantage during the seventeenth year. I recommend this plan not only to improve the teaching of the subject in which I am chiefly interested—no subject can be allowed to domineer over the time-table—but also to benefit the intellectual life of the boys. Slipshod work, so common nowadays, is fatal.

During the earlier years of school-life, say from eleven to thirteen, the mother-tongue ought to be thoroughly learnt. In Germany, and especially in France, this is done in a way which excites the admiration of every visitor. We in England cannot be said to have mastered the problem. I much doubt whether many schoolmasters have ever paid real attention to it. And yet all the many sides of mental life can be developed by a systematic study of the mother-tongue. Boys should be made to express their observations and their thoughts in concise, precise, and grammatical English. They should be made to write neatly, and to pay attention to the more elementary points of style. They should know enough grammar to be able to use grammatical rules to test whether what they have written be correct English or not. And, finally, they should be trained to observe when and why a statement does not express exactly what it is meant to express. In other words, they must be taught to be logical. I should like to testify to the great help it has been in my own school to be able to appeal to the boys' knowledge of their mother-tongue.

I believe my proposals would meet with the approval of the reformers of modern language teaching. One foreign language would be begun before a second was attempted, or, in other words, French would have a start of two years over Latin. The periods thus saved by the postponement of Latin would be given up to the teaching of English. If English were taught more thoroughly, modern languages could be learnt in much less time, and all school work, literary, mathematical, and scientific, would reap great benefit.

There is yet another point to be considered. It is remarkable how rapidly boys progress in Latin if they wait before beginning until their minds are more mature. A large proportion of the time spent in the lower forms is wasted, for a boy can learn afterwards in five minutes many things which require hours in the case of immature minds—if ever they are understood at all. If a little of the time spent on Latin in the lower forms could be kept in reserve for a year or two, the saving of time and labour would be enormous.

I would urge, then, that the reform of Latin teaching is delayed by two obstructions:—

(*a*) Lack of union among classical teachers.

(*b*) An inadequate knowledge of English among the boys.

To the former point I hope to return in a subsequent article. In it I shall also suggest a few principles which I think might with advantage be introduced into the reformed method of teaching Latin. In the present article I have insisted upon the barriers in the way of further progress, barriers which, I am convinced, must be removed before success can be achieved.

It may be thought that I have been too dogmatic in the above criticisms. But I am only expressing what has been driven into my mind by bitter experience. My judgment may be wrong. I sincerely hope that it is. If so, my false opinion can do no harm. But, on the other hand, should there be aught of truth in what I say, I shall be thankful if abler teachers than myself take the matter in hand and set to work to find a remedy.

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THE ARRANGEMENT AND EQUIPMENT OF A GEOGRAPHICAL LABORATORY.

By T. ALFORD SMITH, B.A.
St. Dunstan's College, Catford.

DURING the last ten years, so great an advance has been made in the methods of geographical teaching that the subject as now taught in up-to-date schools may be almost termed a new one. In old-fashioned schools the antiquated method of learning lists of names, often without any reference to maps, is probably still in vogue, but the method is, fortunately, dying out, while its place is being taken by the "new geography," taught in accordance with scientific principles, having as its basis the correlation of the various distributions, and illustrated so far as possible with practical exercises. The old method required no geographical environment; any class-room was good enough; any master was looked upon as competent to teach so dull a subject; while a text-book and sometimes an atlas formed the entire stock-in-trade. Now, however, the new methods require new conditions; teachers with special knowledge are being employed, suitable apparatus is being used, scientific methods are being followed. Just as a specialist in chemistry or physics requires a laboratory, so the specialist in geography works better in a room in which geographical work can be carried on in the most effective way.

An itinerant teacher of geography cannot carry from one class-room to another the apparatus with which to illustrate the main subject of the lesson and at the same time have at hand maps, diagrams, &c., to illustrate the points which occur incidentally during the lesson. In every school it is possible to have a room set apart for this special purpose, in which all the apparatus belonging to the school, whether much or little, may be available for use at all times. In selecting a room, a large one has many advantages, providing as it does plenty of wall-space for maps and diagrams, and floor-space for the exhibition of apparatus. The equipment of such a room presents no serious difficulty as regards cost, for expensive apparatus is not needed; apparatus made by the pupils themselves is often more useful for illustrative purposes than elaborate and costly specimens.

I propose, therefore, to describe how a room may be equipped for geographical work, and at the same time to point out the special work that can be most effectively carried on in it. By way of example I shall refer to a room in my own school that is used entirely as a geographical laboratory. In any room a globe of large size is essential and should always be in evidence; a globe of not less than 20 in. diameter, with a slate surface, having the outlines of the continents drawn in white, and a few lines of latitude and longitude incised, will be found to be most suitable for ordinary work. This will probably be the most expensive piece of apparatus in the room, costing about £3; cheaper globes[1] can be obtained and are better than none. A few good wall-maps, such as the World, England, &c., should be hung up in conspicuous places for constant reference, while maps for which there is no wall-space should be kept in a rack close at hand. Arrangements must also be made, by means of blackboards or easels, to exhibit several maps of a country at the same time; *e.g.*, a lesson to a high form on the vegetation of Africa might with advantage be illustrated by—

(*a*) a contour map of Africa;
(*b*) two or more seasonal rainfall maps;
(*c*) a mean annual rainfall map;
(*d*) a map showing the forest regions, alluvial valleys, deserts, &c., and on which the vegetable productions can be marked in the course of the lesson.

Large outline maps for teaching purposes can easily be made on sheets of drawing-paper by using these sheets as a screen and then throwing a map of the country on them by means of the lantern.

It is also necessary to have cupboards and

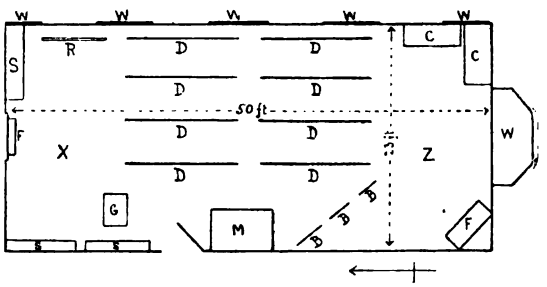

FIG. 1.—D, D, represent the position of desks; R, map-rack; C, cupboards; S, cases for specimens; B, blackboards; M, master's table and platform; G, table on which the globe stands; F, fireplaces; W, windows.

shelves fitted up to accommodate maps, books, apparatus, &c. Here it may be remarked that a geographical library, composed especially of reference books, may in time be formed; in the choice of books, an article by Dr. H. R. Mill, entitled "A Teacher's Library of Geography," in THE SCHOOL WORLD, January, 1900, may be consulted; the library should include books written by as many modern geographers as possible.

Cases for specimens of commercial products should also be provided; a collection of such products is most useful, and pupils are often able to contribute specimens to make the collection more complete. A case containing a few large pieces of the commoner British rocks—especially the aqueous rocks—will also add to the interest of many geography lessons. Specimens of large size (viz., $3\frac{1}{2}$ inches by $2\frac{1}{4}$ inches) can be obtained for 5*s*. or 6*s*. per dozen.

The plan of the room I have in mind (Fig. 1) allows for sitting accommodation for thirty-two boys in the eight desks. A photograph of the north end of the same room is shown in Fig. 2.

[1] See "Globes and Models in Teaching Geography," by J. W. Jarvis, THE SCHOOL WORLD, January, 1906.

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The dimensions of the room are 50 feet by 23 feet; the height is 12 feet. The space x (Fig. 1) between the desks and the north wall is usually taken up with small tables, on which reference atlases, maps, &c., can be placed, and round which a limited number of boys can stand for lessons in map-reading. Between the desks and the south wall, z, there is ample space for setting up apparatus such as plane table, &c., while this part of the room can be used for making rough relief maps with plasticine, modelling-clay, or other suitable material. In such a room it is possible to keep a record of temperatures, pressures, and rainfall, and to make a series of simple observations of the sun.

Great care must be exercised, however, not to tabulate long lists of statistics just for the sake of making record tables, for these may prove quite as uninteresting and unprofitable as the lists of capes, bays, &c., of the old geography books. Every list should be compiled with some definite purpose in view, *i.e.*, to be utilised and correlated with the rest of the work. Pupils must, of course, be taught how to make observations and to read meteorological instruments; after a little practice, however, this becomes a purely mechanical operation, and then it ceases to be of any educational value; but if the result of an observation or a series of readings be used in as many ways as possible to illustrate other lessons, then there will be ample justification for the time spent on such work.

FIG. 2.—The Geographical Laboratory, St. Dunstan's College, Catford.

For example, the observation and measurement of the shadow of a needle set up in the sunlight may be made the subject of many experiments, the results of which may be used in many lessons. Among the exercises depending on this observation the following may be mentioned:—

(*a*) To find the altitude of the sun by measuring the length of the needle and the length of the shadow, and then reading the altitude with a protractor.

(*b*) To plot a curve on the horizontal surface by noting the varying length of the shadow at equal intervals of time.

(*c*) To find the direction of the north-south line by means of equal altitudes.

(*d*) To find the latitude of the school from the altitude of the sun at noon. At the equinoxes the latitude = 90° − altitude. At other times the latitude = 90° − altitude ± declination.

(*e*) To find the sun's path in the heavens for a period of several months by keeping a record of the noon altitudes of the sun taken at intervals during the period.

Fig. 3 shows the results of a series of observations, taken during the summer term, from which the curve has been drawn. The altitudes were, of course, only approximately correct, but they were sufficiently exact to show that the sun rose higher and higher in the heavens up to the solstice, after which it began to descend. The observed altitudes were:—

May 18 57° 30′	June 13, 61° 30′	July 6, 61° 15′
May 27, 59° 45′	June 21, 62° 0′	July 12, 60° 40′
June 1, 60° 15′	June 28, 61° 45′	July 19, 59° 45′

The altitude of the sun can then be found by other methods; *e.g.*, (*a*) by the sextant; (*b*) by the shadow of a needle thrown across a quadrant drawn on a sheet the plane of which is in the plane of the meridian. The latter method is most effective on a wall outside the building and on one which faces due west.

Again, a useful series of exercises can be performed with the globe. By examining it, pupils can discover for themselves (*a*) that all the lines drawn on the globe are circles; (*b*) that the equator and all circles passing through the poles divide the globe into hemispheres; (*c*) that all the other circles divide the globe into unequal parts; (*d*) that the land masses are nearly all north of the equator, and so on.

It can then be shown by experiment (*a*) that the equator and prime meridian are the only circles necessary to determine position; (*b*) that all other circles are drawn for convenience in measuring distances; (*c*) that all these circles depend on the rotation of the globe.

Having learnt these elementary facts, it is possible to proceed to the more difficult determination of the lengths of day and night. This can be done on a large scale by clearing the room of desks, and by setting up in the centre of the room a small lantern or other bright light. At equal distances round the light four tables

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may be placed on which the globe can rest, and they should be so arranged that the centres of the globe and light are in a horizontal plane.

First, hold the axis of the globe vertical and let the light of the lantern fall directly on the equator; it will be seen that the plane of the circle dividing the light hemisphere from the dark one is at right angles to the plane of the earth's orbit, and it passes through the poles. If the globe be now carried round the light it will be seen that under these conditions the sun would be always vertical on the equator, and the days and nights would be equal in duration throughout the year. But from experience we know that the sun is only vertical on the equator twice a year; that it is vertical over places in $23\frac{1}{2}°$ N. long. on June 21st, and over places $23\frac{1}{2}°$ S. long. on December 22nd; moreover, that the length of day and night varies throughout the year (except on the equator). To account for these phenomena, repeated trials demonstrate that the axis must be inclined $23\frac{1}{2}°$ from a vertical to the plane of the earth's orbit. The globe should now be placed with the North Pole turned away from the light, and the northern-

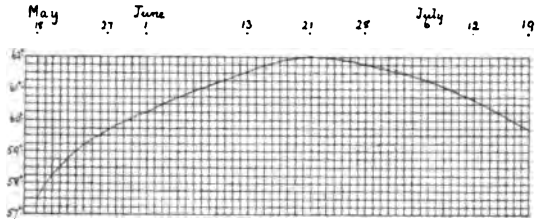

FIG. 3.

most point reached by the light should be noted. At this point a piece of chalk should be held while the globe is rotated; in this way a circle will be traced, viz., the Arctic Circle, and it will be noticed that all places within it are in darkness. Similarly, all places within the Antarctic Circle are illuminated.

If now the globe be carefully carried to the next table (*i.e.*, through an angle of 90°) with the axis always pointing to the Pole Star, it will be seen that the light will gradually creep into the Arctic Circle until it just reaches the North Pole, while the direct rays fall on the equator. In the same way observations can be made as the globe is slowly moved into other positions round the light. It will thus be clearly shown that the Equator, Tropics, Arctic Circles are due to the varying positions of the earth in its annual revolution round the sun.

The same phenomena may be illustrated to some extent by taking a vessel of water, the surface of which represents the plane of the earth's orbit, and half submerging in it a sphere on which the lines mentioned above are marked, and whose axis is inclined $23\frac{1}{2}°$ from a vertical to the water surface. By moving the sphere round a fixed point on the water surface to represent the sun, the apparent movements of the sun north and south of the equator may be demonstrated.

Again, it is a great saving of time to explain in the geographical laboratory apparatus which will afterwards be used out of doors; for instance, the plane table can be set up and levelled; the direction of the magnetic north can be determined with a compass, and the use of the sight-ruler explained. All this can be done conveniently indoors, so that when an opportunity comes for outdoor work, the limited time in the field may be fully occupied in actual surveying and map-drawing.

Similarly, a rain-gauge can be shown and explained so that pupils may see how the amount of rainfall for a given time can be measured. After this the gauge may be placed in a suitable position, and each day the amount can be measured and entered on a chart kept for the purpose. In this case the method is perhaps more important than the actual results obtained, as holidays interfere with the readings for a considerable part of the year. Lastly, charts showing readings for daily temperatures and pressures can be plotted, while the "Daily Weather Reports" issued by the Meteorological Office can be utilised to show the use of comparing statistics compiled in different places.

A course of geographical work and practical exercises such as that indicated above can only be successfully undertaken in a room specially reserved for this purpose—many of the experiments can be carried on without seriously interfering with the ordinary geography lesson. Few books have as yet been published on practical work; but "An Introduction to Practical Geography," by A. T. Simmons and Hugh Richardson (Macmillan, 3*s.* 6*d.*) is suggestive and full of interesting exercises; and "A Progressive Course of Comparative Geography," by P. H. L'Estrange (Philip, 6*s.* net) will repay examination.

TEACHERS' NOTES ON BRITISH HISTORY, 1688–1906.

By C. S. FEARENSIDE, M.A. (Oxon.).

I.—BRITAIN AND EUROPE IN 1688.

BRITISH history during the generation following the flight of James II. has been already dealt with in these columns (May, 1900), but then it was as the conclusion of a period. Very different, of course, must be its treatment when it forms the beginning of our studies. We have to make sure that the terms used convey a meaning that is at once definite and correct; and this can often be attained only by some sort of historical retrospect. In geometry, *square, triangle, circle,* and other terms have definite and stable meanings; but in history we have to deal with things called by such names as *England, Kingship, Parliament, Church,* which have a dangerously familiar look that often hides the fact that they are really as

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changeable as a chameleon and as elusive as Proteus. It is not usual nowadays to begin the study of geometry by learning off by heart a hundred abstract definitions; nor need we begin our study of the last two centuries by historical definitions of, say, the thousand political and geographical terms that will crop up during our period. But we can begin with a general *résumé* of the historical geography of both Britain and Europe, and make sure of our political terms as we come to them. A select list of these is given in the "Vocabulary of Political Terms" contained in Mr. J. S. Lindsey's "Salient Points in Modern History" (Heffer, 1*s*.).

(i) British Dominions in 1688.—The obvious differences in both the course and the results of the Protestant Revolution in the three kingdoms and in the oversea dominions at once justify and necessitate a retrospect explaining their differences—geographical, racial, linguistic, institutional, and ecclesiastical. The recentness and the looseness of this aggregation of realms (which was almost as fortuitous as the association of the Britains and the Netherlands under William III.) can hardly be over-emphasised. For literary illustrations one could use such familiar "poems" as Defoe's "True-born Englishman" (for England), "Lillibulero" (for Ireland), and Sir Walter Scott's "Bonnie Dundee" (an admirable text for a little discourse on the essentials of Scottish history): for the chief historical data we can hardly do better than consult Mr. H. B. George's "Historical Geography of the British Empire" (Methuen, 3*s*. 6*d*.) and Mr. Robertson's companion Atlas (Methuen, 4*s*. 6*d*. net).

Failing time for such a connected survey, the principal facts could be given or elicited in connection with post-Revolution events: for instance, Killiecrankie and Glencoe, the Dublin Parliament, the Siege of Derry, and the Broken Treaty would be so treated as to reveal the fact that "Scotland" and "Ireland" were still little more than "geographical expressions," while the differences between the *Bill of Rights* and the *Claim of Right*, and again between the ecclesiastical settlements in England and Scotland, show that the dreams of Somerset and Maitland had not yet been fulfilled by the establishment of "Great Britain." And these points all help towards accounting for the differences between the "union" legislation of 1707 and 1719.

As regards "British Dominions" oversea, I have found that a most suggestive starting-point can be obtained by eliciting from the class a list of such in 1688. There are usually a number of bad shots: these may be collected on the blackboard in three columns dealing respectively with past (lost), present (in possession), and future (not yet won). Ultimately the middle column will be found to contain some score names which stand for a sprinkling of "factories" in Asia and Africa (mainly on the coasts), a few "plantations" in the West Indies, and a fringe of "settlements" along part of the Atlantic coast of North America. Both the actual insignificance and the potential importance of these could easily be displayed by means of the mutually illuminative books, before cited, of Messrs. George and Robertson.

(ii) British Institutions.—All these things can be regarded as coming under the head of "Historical Geography," and can be made comparatively visual and objective by the help of maps. Institutions stand on a very different footing; and their abstractness and the confusing contrasts between formulae and forces, between outward appearances and actual facts, make their effective handling difficult. In fact, the treatment here especially must vary according to the tastes and previous training of both teacher and pupils, tc the time at their disposal, and to their ultimate objective. It would not, I fear, "pay for examinations," but yet I cannot help thinking that it would pay as a "preparation for life," to adopt the "civics" standpoint in dealing with the history of institutions during the last year or two of the school career. That is to say, the pupils should be given some idea, clear and definite so far as it goes, of how we are governed to-day, and all the constitutional facts encountered in the historical course would be treated mainly as steps towards the existing state of things. I do not imagine this is easy, but I am sure it is worth doing, and American experience at least seems to show that it is possible to do it. The teacher who would essay this task must be steeped in Prof. A. V. Dicey's "Law of the Constitution" (Macmillan, 10*s*. 6*d*. net), and he can find many useful hints on suggestive class-room treatment of topics in Mrs. Dale's "Principles of English Constitutional History" (Longmans, 6*s*.), and on method in Prof. H. E. Bourne's "Teaching of History and Civics" (Longmans, 6*s*. net). Such a mode of procedure would not, I believe, be wholly unprofitable even from the point of view of "examination results." Most boys and girls can "enumerate the principal clauses" of the *Bill of Rights* or *Acts of Settlement* with considerable success: they are markedly less successful if they attempt to explain the practical meaning or bearing of those "clauses" or to trace any long-continued constitutional development.

(iii) British Social Conditions can certainly best be realised by contrast with the conditions of to-day. This is the method adopted in Macaulay's famous third chapter; and though his contrast to the England of his own day is not so effective to us as it was to his own generation, it still remains, so far as I know, the best introduction for intelligent youth to the social side of the history of the last two centuries. The teacher or the more inquiring pupil will be able to correct and supplement Macaulay by the use of the fourth volume of "Social England," edited by Messrs. J. S. Mann and H. D. Traill (Cassell, 14*s*. net).

(iv) British External Relations.—Here we have to deal (both separately and in combination) with three things—the States, their Rulers, and

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their Policy. The first is geographical, and can be made clear by means of historical maps. The second is biographical, and, if we had a rational curriculum in History, most of the notable personages would be something more than names to pupils before they reached the penultimate stage of their school career. The third is mainly the resultant of geographical and biographical forces.

(1) FOREIGN STATES.—In 1689 the central State in Europe was France, which was surrounded by a ring of actual or potential enemies named "England, &c.," "Holland, &c.," "Austria, &c.," "Savoy," and "Spain." The map-meaning of each of these terms (and especially of the "etceteras" by which three of them are followed) must be made clear by the help of both physical maps and maps showing Europe in 1688 and Europe at the present day. The most dangerous errors are the attribution of political meanings to "Germany" and "Italy," the creation of an imaginary "Empire of Germany" to which Austria and Prussia stand in either vague or imaginary relations, and the premature use of "Holland" and "Belgium" as names for independent entities. Nearly all the essential explanations could be made in connection with an exposition of the northern and eastern boundaries of France: a physical map would reveal the absence of natural frontiers; the diagrams in Freeman's "Historical Geography" (Longmans, vol. ii., 6*s.* 6*d.*) would reveal the recent fluctuations in the political frontier and the possibilities of further French expansion; while the weakness of the neighbours of France in these directions could be explained historically by reference to the Holy Roman Empire (introducing Austria, Bavaria, the Palatinate, Brandenburg, Prussia, Savoy), and to the cleavages effected by the Reformation. This last topic would naturally lead up to the "personal union" of "Holland, &c.," with "England, &c.," under William of Orange[1] (the situation of which principality might as well be discovered to or by the class).

As regards the outer ring of European States, it would suffice to mention *Poland* in connection with Prussia; *Russia* and *Turkey* (noting generally their extent and limits) as the successors of the eastern side of the old Roman Empire; *Sweden* as still the dominant Power in the Baltic (connecting the fact with the quarrel between Charles I. and his English Parliament); and especially to direct attention to the possible intervention of these distant Powers in Western politics. Here the idea of concentricity would be useful: France, in the centre, is disliked by most of her encircling neighbours, who are in turn disliked by the next ring of States; hence France often has hereditary dislikes in common (not a very strong tie) with members of the Outer Ring (*e.g.*, Ireland, Sweden, Poland, and Turkey). Early in the eighteenth century, of course, the members of the Outer Ring will come up for substantive consideration—*i.e.*, in their own mutual relations, not as satellites, actual or possible, to Western Powers. "Putzgers Historischer Schul-Atlas" is by far the best and cheapest to illustrate such points concerning German and general European history (Nelhagen, 3 mk.): care should be taken to get a recent edition.

(2) FOREIGN RULERS.—Here *Louis XIV.* is the only figure of transcending importance; and the shadowy nature of the figures of his earlier opponents, *Leopold I.* and *Charles II.* (of Spain), will help to throw into relief the dominant personality of *William of Orange*; while in the background must be named the mightier figures (though to contemporary Westerns they were but shadows) of *Charles XII.* and *Peter "the Great."* The pages of Macaulay's "History" and of Voltaire's "Louis Quatorze" contain vigorous portraits of the Western protagonists; for the Northern one it would be difficult to excel the closing lines of Dr. Johnson's "Vanity of Human Wishes"; and to correct these literary portraits according to the most recent historical lights we turn to the fourteenth and seventeenth of Lord Acton's "Lectures on Modern History" (Macmillan, 10*s.* net).

(3) FOREIGN POLICY is the result of geographical and biographical facts and fancies, and is exceedingly complicated. The main motives and general tendencies must be made clear, but not by the neglect or suppression of the exceptions. At the outset we need consider little beyond the following questions:—

Especially as concerns the British Dominions,

(*a*) What were Louis XIV.'s chief aims, especially in the international sphere?

(*b*) How far were these aims peculiar to Louis XIV., and how far normal in French history?

(*c*) How did these aims affect each of his neighbours?

(*d*) Why did each of these neighbours *wish* to oppose him?

(*e*) How far did each of these neighbours *dare* to oppose him?

(*f*) What causes helped and hindered these neighbours working together against Louis XIV.?

(*g*) What were the main incidents and results of these struggles?

Most of the facts worth remembering by the non-specialist are closely connected with some of these crucial questions. I have endeavoured to show that such matters can be treated shortly and simply (without, I hope, much serious falsification) in my article on "Foreign Affairs, 1688–1832" (THE SCHOOL WORLD, May, 1901). But that article is quite elementary: it represents merely an irreducible minimum for the pupil. The teacher will naturally go further afield for materials; and the most suggestive books of moderate size to consult are Lavisse's "Vie générale de l'Histoire politique" (Colin, 3 fr. 50), Sir John Seeley's "Growth of British Policy" (which, it is to be hoped, the Cambridge Press will soon be able to issue in one volume at a

[1] If, without warning, all the schoolboys of sixteen in England were promised an orange if they could say where Orange is, how many cases of oranges would the prize-giver require to pay his debts?

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lower price, and equipped with the tables, &c., which would make it a good abiturient book for upper forms), and especially the trenchant views expressed in the recently published "Lectures on Modern History" by Seeley's successor at Cambridge.

IS AN ACCURATE FIGURE ESSENTIAL TO THE PROOF OF A GEOMETRICAL THEOREM?

By A. T. WARREN, M.A.
William Ellis School, London.

AT the time of the introduction of the new method of teaching geometry, grave fears were expressed by some mathematicians as to the result of the experiment. For a time their fears appeared to be justified. They could point to examination papers, set for fairly advanced candidates, which required little more than geometrical drawing and the application of simple geometrical principles. The demand for more solid reasoning seemed to be disappearing, and the proposition was at a discount. With this attitude of the examiner towards the subject, were teacher and pupil likely to refuse to take the path of least resistance, which was thus thrown open to them? With some, geometrical drawing became a craze; the ruler and compasses were used on every occasion. So far as the ordinary class-work was concerned, the inaccurate figure almost ceased to exist.

This, however, merely represented the transition stage. We have now reached the stage at which, instead of candidates on whose old Euclid stock the new method has been grafted, we have those who from the beginning have been trained on the new lines. Examining bodies, too, have modified their demands for geometrical drawing so far as the later stages of the subject are concerned. It is, however, open to question whether too much attention is, even now, not being paid in the class-room to geometrical drawing. Is experimental work, which at the beginning is so stimulating and instructive to the pupil, being allowed undue prominence in the later stages? Are we bringing up a set of pupils who from their dependence on instruments will be incapable, without their aid, of drawing a figure that would serve as an intelligible guide to their proof of a proposition? As an answer to these questions, the Report of the Examiner in Geometry for the Senior Oxford Local Examinations is of interest.

The Report begins by stating that "the work showed a great improvement over that of last year. For the most part the propositions were correctly written out and a fair number of candidates were successful in solving riders." So far, so good. Satisfaction is expressed with that part of the work in which there is a call upon their reasoning powers. But, alas! there is a fly in the ointment. The Report proceeds to state that "the most unsatisfactory work was done in the drawing of the necessary figures. A question which required the bisection of the vertical angle and the bisection of the base of a triangle scarcely ever produced a figure even approaching to correctness." Should not such a result have been expected? Was it not an inevitable consequence of the conditions of an examination, if the candidate's training had made him absolutely dependent upon the aid of his instruments? He was desirous of doing as many questions as possible. Was it likely that he would spend time in mechanically reproducing those exact figures which had been encouraged, if not insisted upon, in his ordinary class-work? He was pressed for time, and very naturally discarded the use of instruments. Thus his drawing broke down. For a year he had been a slave to the ruler and compasses; for one day he enjoyed the pleasures of emancipation. The result was natural. Yet should it be made a plea for a still more slavish adherence to the methods which produced it? Should it not rather serve as a reason for encouraging the pupil to depend, whenever possible, on his own unaided illustrative powers.

This unsatisfactory drawing of the figure in connection with the writing out of propositions and the solution of riders may come as a surprise to some of us. Still more will be astonished by what the Report proceeds to imply. We are told that "many candidates who failed in drawing the figure sent up an otherwise faultless proof." What are we to make of this? The 'otherwise' is the crux of the whole matter. Without it we have a mere criticism of the work of the candidates. With it we have an implication that the figure is a part of the proof, and to this exception must be taken.

What is the function of the figure in connection with a geometrical theorem? Is it not merely a guide helping one to follow the proof, and not a part of that proof? It cannot help to prove; it may serve to verify. This apparently is not the opinion of the author of the Report, for he proceeds to imply that accuracy of drawing in a theoretical demonstration is a matter of importance. The object of this article is to show that such accuracy is not merely unnecessary, but that to attain it by the ordinary methods is in some cases unjustifiable, and in all cases undesirable.

A question, such as that with which we are now dealing, was liable to arise under the old, as well as the new, conditions of teaching geometry. Under the old conditions we should have had to be content to form our judgment from a study of the text of Euclid. At the present time we are more fortunate. We have the Recommendations on the Teaching of Geometry issued by the Committee of the Mathematical Association, on which our modern text-books are based, and which have been accepted by examining bodies as embodying the principles on which they are prepared to examine. In that part of the Recommendations which deals with theorems the Committee states that it makes its pro-

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posals "with a view to making the course of theorems independent of methods of construction." In the same paragraph hypothetical constructions, as they have been called, are recognised—that is to say, angles and straight lines may be supposed to be bisected before any method for doing so has been justified. How is an exact figure in such cases logically possible?

Let us take a case to illustrate the way in which the demand for an accurate figure could not logically be complied with. Suppose that it is required to prove that all points equidistant from the arms of an angle lie on the bisector of that angle. How is the necessary figure to be constructed if accuracy of drawing is demanded? To obtain a point satisfying the hypothesis, one may use the fact that all points within the angle which are at the same distance from one of its arms lie on a straight line parallel to that arm. A straight line drawn parallel to the other arm will contain all the points within the angle which are at the same distance from the other arm. If these two loci be drawn, their intersection gives us a point which is equidistant from the two arms. For this construction to be justifiable, the nature of the locus of a point which is at a given distance from a given straight line must have been previously established by proof. In how many text-books on geometry is the proposition, of which use has thus been made, anterior to the one of which the proof is being established? But there is another way open; one may start by bisecting the given angle, and then take a point on the bisector. In such a drawing the conclusion of the proposition will have been assumed in order to satisfy the conditions contained in the hypothesis. An accurate figure will thus be obtained which is not even useful for the purpose of verification.

There is one great difficulty in basing the argument on the logical sequence that must be observed in geometry, for there is no longer an established common order of propositions. Let us, then, refer to Euclid, and endeavour to see what provision he made for the drawing of an accurate figure. In I. 4 it would be necessary to represent two triangles with two sides, and the included angle of the one equal to the corresponding parts of the other. How is an accurate representation of them to be given? The same difficulty arises in I. 6, where we should have to represent a triangle with its two base angles equal. In each case a construction is required for making an angle equal to another. Such a construction could not be justified till I. 8 had been proved. For an accurate figure to I. 8 we should require to be able to draw a triangle with its sides equal to those of another triangle; such a construction first appears in I. 22. After this we arrive at I. 23, which gives us the method for constructing the accurate figure to I. 4, the proposition with which we started. It thus becomes evident that even Euclid's order of propositions would not allow us logically to furnish an accurate diagram in every case. Our present text-books are no better in this respect. To meet this new demand for the exact figure, the whole subject would require reconstruction after being once more cast into the melting-pot.

It would be interesting to know what would have been Euclid's views on the accurate figure. We all know his strict views as to the character of the line and figure. Would he have considered any diagram, however accurate, as a figure at all? When he begins a particular enunciation with the words "Let A B C be a triangle having the two sides A B, A C equal," what is to be taken as his meaning? Is he introducing a diagram? Is he making a demand for a hypothetical construction? Is he not merely naming the parts of the hypothetical figure, not an actual diagram, to which he will refer? A diagram of any kind is unnecessary so far as the proof is concerned. It generally becomes necessary owing to inability on the part of the prover of the proposition to carry out the reasoning without some such check.

The diagram in reasoning is on a par with the use of the fingers in addition. The necessity for their use in each case arises from one's mental limitations. Neither accuracy in the former nor *absolute* cleanliness of the latter affects in the least the result for which it is being employed. A reasonable approach to such perfect conditions is to be exacted only for the purpose of general education.

Neatness, merely for the sake of neatness, can be gained at too high a price. Time that should be devoted to reasoning ought not to be sacrificed to mechanical drawing. The last should have been practised in the earlier stages, and it is then that it is necessary. Without it the pupil can neither discover nor verify a geometrical truth; without it any quantitative result obtained in practical geometry is worthless. Even with it one cannot depend on the exactness of the result as one can on a result obtained from calculation based on reasoning. The latter must, after all, be the object of the pupil. Let him press on towards it without being unduly hampered by a demand for the over-elaboration of the diagram which accompanies his reasoning. Let him be encouraged to sketch figures of good size and shape. Let the development of the figure keep pace with the steps of the proposition. The pupil will then be more likely, when under the stress of examination, to produce a figure that will satisfy the examiner and the requirements of the subject.

Petits Contes pour les Enfants. La Fée Égarée; Sur la Montagne; Le Bal de Mademoiselle Papillon. 56 pp.; 47 pp.; 56 pp. (Blackie.) 4*d.* each.—Three pretty little tales, well suited for children. The author's name is not mentioned; they might be written by an English lady to judge by the spirit, but the French is excellent. There are no notes; the French-English vocabularies are good. The full-page illustrations deserve praise. Altogether these booklets can be warmly commended.

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THE TEACHING OF VULGAR FRACTIONS.

By L. W. WILSDEN, M.A.

II.

(*Continued from p. 212.*)

TO deal in detail with the actual teaching of vulgar fractions, as a whole, would call for more space than is here at our disposal. The subject, however, naturally falls into two divisions, the first including a general consideration of the nature of fractions, together with the rules for their addition and subtraction, the second dealing with their multiplication, division, and simplification. By employing somewhat summary methods and by numbering the separate steps of the advance, it may be possible for us to cover the ground occupied by the first division with some degree of fullness; on the second division of the subject we must content ourselves with a few general observations.

1. If five buns have to be equally divided among four bears, it will be possible to give them a bun apiece, but the fifth bun will have to be cut into four equal parts.

Three thirsty men have to share one jug of water.

Show by means of these and similar examples—

(*a*) How the necessity for fractions arises.

(*b*) That the size of fractions varies according to the number of equal parts into which the whole is cut.

2. Names for the different kinds of equal parts, into which things are cut, are so rendered necessary.

3. Once things exist and have names, it is possible to put numbers before them to signify "how many"; *e.g.*, five elephants, seven spiders. In the same way it is possible to say two-thirds, five-sixths.

4. Set down in written words fractions are somewhat cumbersome, and accordingly a shorter way of expressing them has been devised by means of numerals.

Notice here the common confusion by which the numerical expression for a fraction is spoken of, as though it were the fraction itself. This is in reality just as foolish as it would be to assert that the printed word TIGER is the same thing as the real, live, snarling animal.

5. Take any one of the shapes and prove that the shaded part can, by subdividing all the original divisions each into the same number of equal portions and by varying that number, be shown and therefore expressed in a limitless number of ways.

6. The simplest expression of any fraction is that in which the smallest possible number of divisions is used; the numerical expression for a fraction in this form is said to express the fraction in its lowest terms. It is generally convenient to deal with a fraction in its lowest terms. To reduce a fraction, not already expressed in this way, to such terms, it is necessary to reduce the number of divisions in the whole of which it is a part. This is reversing the process of the last section. In each particular case the question arises, "How many fewer?" The answer to this is that it is possible to go on reducing the number of parts so long as some particular number of the new parts will exactly fill the fraction in point. In other words, in order to reduce a fraction to its lowest terms, make the same number of times fewer divisions in (*a*) the whole, (*b*) the fraction in point. That is to say, find the largest number that will exactly divide the number of parts in both the whole and the fraction, and make that number of times fewer divisions in each. A way for finding such a number has been devised. Teach G.C.M. with many apologies for not being able to explain the reasons of the working.

7. Show by actual problems that the necessity for adding two fractions will frequently arise.

PROBLEM. *Two jugs are each partially filled. What fraction of the one would be filled if the second were emptied into it?*

CASE I. Where the two jugs are both divided into the same number of parts.

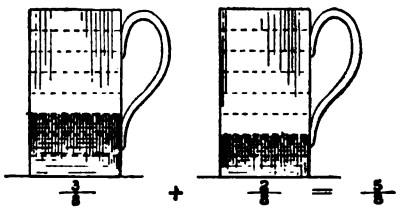

FIG. 1.

CASE II. Where the two jugs are not divided into the same number of parts; but where it is possible, by subdividing the divisions in one of them, to get the same number of divisions in each.

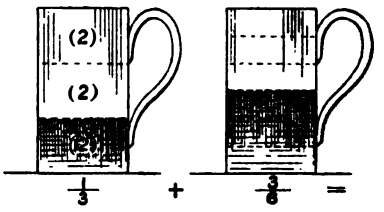

FIG. 2.

By subdividing each of the divisions in the first jug into two equal parts, the jug is cut into sixths. The fractions to be added can then be expressed as follows:—

$$\frac{2}{6} + \frac{3}{6} = \frac{5}{6}.$$

CASE III. When the number of divisions differs, and it is impossible to change the number of divisions in one jug, so as to make it correspond with that in the other.

In such cases it will be necessary to subdivide the divisions in both jugs, but differently in the

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two cases, so as to get the same number of divisions in each.

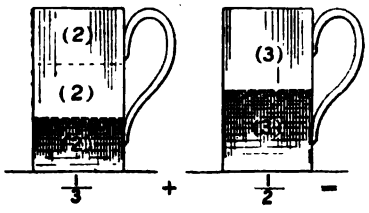


FIG. 3.

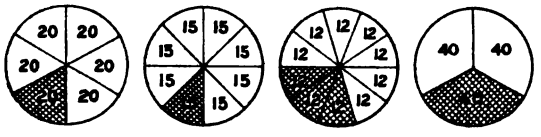
Subdivide the parts of the first jug into two divisions each, and of the second into three, and each jug will be found to be divided into six equal parts. The fractions can then be stated and added as follows:—

$$\frac{2}{6}+\frac{3}{6}=\frac{5}{6}.$$

8. Exactly the same procedure must be followed when several fractions are to be added—that is to say, the number of divisions in the wholes of which they are parts must be changed in some or all cases, as may be necessary, in such a way as to get the same number in all of them. When the number of fractions to be added exceeds two, it becomes very difficult to tell what the number of divisions will be, into which all the wholes can be altered. What is really wanted is some way of finding this number with ease. It must be the smallest number into which all the numbers representing the numbers of divisions in the several wholes will go exactly.

Teach L.C.M. with apologies for being unable to explain the working.

Problem in addition worked in full, to show the method.—*Four trippers, each provided with a bun, met a fellow-tripper not so provisioned, and contributed to his refreshment the shaded portions of their several buns, as shown below. How much did he receive in all?*



$$\frac{1}{6}+\frac{1}{8}+\frac{3}{10}+\frac{1}{3}$$

$$=\frac{20+15+36+40}{120}$$

$$=\frac{111}{120}$$

$=\frac{37}{40}$ of a bun were given to the destitute tripper.

FIG. 4.

When converting each separate fraction from its original to its new form, use the following reasoning.

"Each old division must be divided into x new divisions, and we have y old divisions; therefore we shall have y times x new divisions." The use of this formula converts what is generally an arithmetical juggle into a concretely reasoned operation.

9. Subtraction needs no special notice. The jugs readily provide the kind of problem wanted, the pouring out of so much from one jug to another giving all that is required.

The barest possible outline of method has been given above, and the greatest economy observed in the matter of illustrations. In actual practice the cardboard shapes would, of course, be very much more in evidence, the argument in each case starting from them and being referred back to them at every step.

Of the numbered sections, perhaps the most important are those marked 5 and 6, containing as they do the principles upon which the operations performed in adding or subtracting rest. Yet, owing to haste caused by the desire to get to the rules that make a show on paper, this essential part of the subject is often slurred. The verbal explanations given in these sections are not satisfactory in themselves, but in class it is not the words spoken, but the actual visible shapes, the text of the words, which form the most important part of the explanation and carry conviction. With the aid of the shapes it ought to be possible to get the essential nature of reducing to lower terms really understood.

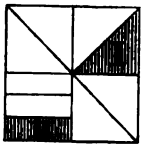
From the very first lesson, an abundance of concrete problems should be given for solution, and care should be taken that when any working with numerals is required, such numerals should rule small, the object being to give the maximum amount of thinking to the minimum of mere figure manipulating.

In practice it will be necessary to have several ledges in full view of the class, on which the shapes may be placed singly or in rows, as required. Should the architecture of the room not furnish the necessary features, an apparatus of movable ledges can easily be constructed to hang on the blackboard.

SPECIMEN PAPER I.

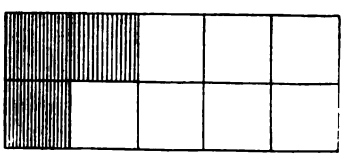
COVERING THE FIRST STAGE.

(Suggesting the kinds of problems which may be employed.)



1. Express (*a*) in words, (*b*) in figures, the parts of this square marked I. and II.

2. What fraction of this jug do you judge to be full? What fraction is empty?



3. Express the shaded part of this stick of chocolate in five different ways.

4. Express $\frac{5}{30}$ of a bun in its lowest terms, and draw

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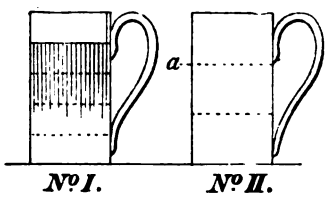
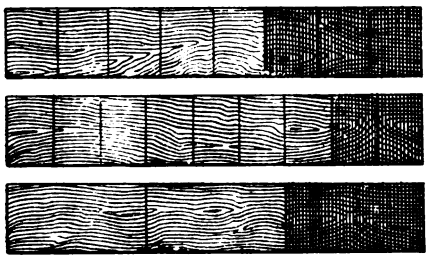
a bun, by marking round a penny, in which this fraction is shown shaded.



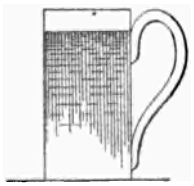
5. No. I. jug is full up to the point shown. No. II. jug is empty. How much liquid would remain in No. I. if No. II. were filled from it to the point marked *a*?

6. The shaded parts of these three planks had to be cut to waste. How much wood was wasted altogether?



SPECIMEN PAPER II.

COVERING THE SECOND STAGE.



1. (*a*) What fraction of this jug do you estimate to be full?

(*b*) Supposing the contents to be milk, if I drink ¼ of the contents myself, and give two-fifths of the remainder to the kittens, what portion of the jug will still be full?

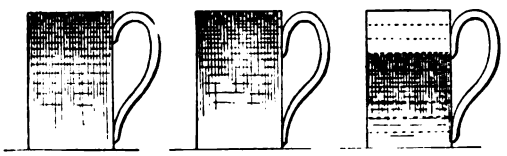
2. These are the palings which Tom Sawyer was set to whitewash. The white part shows exactly how much Tom did before he induced his friends to pay him for the privilege of completing the work.

(*a*) What fraction of the whole fence did Tom whitewash?

(*b*) What fraction did his friends whitewash?

(*c*) How many times more did the friends do than Tom?

3. These jugs represent the cider which the harvesters on a farm drink in one day. How much cider will be required for the whole harvest if it lasts 16½ days?



4. A farm carries 489 sheep at an average of 1⅛ sheep to the acre. How big is the farm?

5. A liner takes 5⅓ days to cross the Atlantic, and burns 3,000¾ tons of coal by the way. How much does she burn a day?

When the stage which ends with addition and subtraction of vulgar fractions has been conscientiously travelled, three courses lie open:—

(i) To go on with vulgar fractions in exactly the same spirit, using the concrete at every step.

(ii) To abandon the concrete method in part, and to rely for teaching the remaining rules mainly on numerals.

(iii) To abandon vulgar fractions altogether for a time and to turn to decimals.

On these three possibilities we will allow ourselves a few words.

If a concrete method is to be successfully applied to the teaching of multiplication, division, and simplification of fractions, the teacher will have to exercise a good deal more thought and ingenuity than is called for in the first stage of fraction teaching. Even when these are forthcoming in full measure, some teachers may get better results by trusting chiefly to numerals in this second stage. It will rest with the individual teacher to decide which method he can work to the greater advantage. Personally I prefer the concrete method, but space is not here available for even outlining the steps by which such a method might be carried into effect.

We have yet the third alternative to consider. It has become fashionable to say that decimals should precede vulgar fractions. Theoretically, decimals involving, as they do, only a slight extension of principles already familiarised in the working of the four simple rules, have undoubtedly a claim to the first place. Practically, however, the four simple rules are seldom learnt on the basis of an understanding of the decimal notation, and therefore, as a matter of fact, decimal fractions, when they do come, are in all their ways completely strange and new. Furthermore, decimals cannot be taught at all until the concrete idea of a vulgar fraction has been thoroughly grasped, and this cannot be said to be the case until the first stage of vulgar fractions, to the end of addition and subtraction, has been accomplished. There are, therefore, several strong arguments in favour of finishing vulgar fractions before considering decimals at all.

(*a*) That it creates a sense of confusion to begin a subject, and then leaving it halfway to dodge off to something else.

(*b*) That, having acquired the four simple rules mechanically, the learner will not feel any particular appropriateness in following them up immediately with decimals.

(*c*) That, having acquired the four simple rules mechanically, it will be well for him to make a complete break, and to start afresh on a purely concrete basis. That this can best be done by taking vulgar fractions as a whole.

(*d*) That, having once got the concrete idea of arithmetic into his head, he will be in a better position to turn to the theory of notation, and to justify the operations of the four simple rules in the light of the wider knowledge that he will gain from an acquaintance with decimal fractions.

This matter is, however, again one of those that each teacher must settle for himself in the light of his own powers and feelings.

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THE CLASSIFICATION OF CLIMATES.

By H. N. DICKSON, M.A., D.Sc., F.R.S.E.
Lecturer in Geography, University College, Reading.

FEW parts of his subject prove more troublesome to the teacher of geography than the classification of climates. A certain limited number of climatic types must be found, and their distribution in climatic regions must be discussed, but the information supplied by the ordinary text-book is usually meagre, and it is not always easy to know which way to turn for more.

The simplest solution of the problem is, of course, to begin with the standard set of conditions described as "planetary," the conditions which we may suppose to arise on any rotating planet which has an atmosphere and is warmed by a sun, provided the surface of that planet is uniform. These conditions are constantly approximated to on the surface of the earth where large uniform areas occur, as in the oceans, and they produce a system of belts of which the boundaries are parallel to parallels of latitude, and which moves northward and southward, following the sun. Thus we have the "doldrums," the "trade-wind" belts, the "horse latitudes," the "Roaring Forties," and so on. A knowledge of the positions of these belts, of their migrations, and of the type of climate experienced within each is quite within the reach of the average schoolboy, and will carry him far; but there are wonderfully few who attain to it. Trade-winds are known, and explanations of their causes more or less dimly understood, but it is rare to find a boy who knows where they blow, or can name a place which comes under their influence. Still more rarely does one come across any acquaintance with the equatorial belt, or the sub-tropical high pressure belts, or their movements; and the simpler generalisations concerning double rainy seasons, seasons of tropical cyclones, regions of desert and of winter rainfall, are a sealed book to many examination candidates who show quite uncalled-for familiarity with details of topography. Yet up to this point at least the facts are easily accessible; we need only name such books as "Elementary Meteorology," by Prof. W. M. Davis (Ginn), which contains all, and more than all, a teacher wants.

The next stage is somewhat more difficult, but still well within the possibilities of school work, and it must be reached if the pupil is to arrange the geographical "pictures," collected in earlier years, for himself. In this the departures from the planetary system which are due to the distribution of land and sea are studied, and the increased difficulty is, of course, chiefly due to the fact that the distribution of land and sea follows no simple law. Nevertheless, certain general features stand out clearly enough. Within the meteorological tropics the general movement is westward, and hence sea influences are carried inland from eastern coasts, and land influences seaward from western coasts. Outside the tropics, in the west-wind belts, the arrangement is reversed. But over all is superposed the monsoon influence, which is largely a question of surface relief—for there is no draught in a horizontal chimney. This influence may entirely reverse the planetary circulation, as in India, or it may reinforce it, as in South Africa; the varied effects afford studies in physics of extreme interest which, in outline at least, are elementary. Again, the eastward movement in extra-tropical latitudes already referred to causes a gradual transition from an oceanic type of climate, with winter rainfall, in the west (continuous with the sub-tropical belt of winter rainfall on the equatorial side of it), to a continental type, with summer rainfall, in the east, merging with the monsoon summer rainfall nearer the equator. Here the distribution of climates in Eurasia, where the conditions can be fully developed, are easily described and remembered.

Another effect of surface relief can now be studied with advantage—the effect of elevated land upon a wind which is not causd by it. Under this heading come the increased rainfall on the weather side, the "rain shadow," and the foehn or chinook winds of the lee side.

The ordinary geographical text-book will scarcely guide the teacher to this point of his journey, although Davis's "Meteorology" is still more than sufficient. Experience proves abundantly that the pupil finds the more general methods suggested easier and more interesting than the immense amount of descriptive detail which seems to be the only alternative.

The way of further progress is indeed hard, for it means that the pupil, having completed a general survey, is fit to undertake the more minute geographical study of a region or regions. Unfortunately, the number of pupils who become so fit in this country is still small, but of late years it has become appreciable, and there are many reasons for believing that the increase in the near future will be considerable. For their more advanced work a closer classification of climates and climatic regions is essential, and the classification must depend not merely upon physical conditions, but to a greater and greater extent upon the needs of geographical applications, such as, for example, the distribution of plants. The facts of climatology are accessible in Hann's monumental "Handbuch der Klimatologie," of which part has been translated by Prof. R. de C. Ward (The Macmillan Co., 1903); but the question of classification of climates remains in some degree an open one, and the teacher cannot be expected to unearth from the original documents the different systems which have been proposed, and sit in judgment upon them. Fortunately, Prof. Ward has removed all need for this in an admirable paper published in the July and August numbers of the *Bulletin of the American Geographical Society*. In a short summary, with full references, the chief systems of classification which hold the field are described, and Prof. Ward decides that "that of Supan, taken as a whole, gives a rational, simple, and

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satisfactory scheme of grouping, whose frequent use in climatic descriptions would tend towards system, simplicity, and facility of comparison." "It emphasises the essentials of each climate, and serves to impress these essentials upon the mind by means of the compact, well-considered verbal summary which is given in the case of each province described."

LANGUAGE TEACHING IN THE SIXTEENTH CENTURY.

By the Rev. H. J. CHAYTOR, M.A.
King Edward's School, Sheffield.

RIVINGTON GRAMMAR SCHOOL in Lancashire was founded by James Pilkington, some time Bishop of Durham, who was born in 1520 and died in 1575. His statutes for the working of the school were unusually elaborate, and provide a fairly complete picture of the working of a grammar school in the sixteenth century.[1] The general directions for the teaching of languages anticipate upon certain points some of the theories with which modern language and, indeed, classical masters are more or less concerned, and have, therefore, an interest which is something more than merely antiquarian.

It must be remembered that a "grammar" school meant primarily a school where Latin was taught. "Grammar," as most people know, was synonymous with Latin in the middle ages. The sixteenth-century schoolboy was expected not only to read and write, but also to speak Latin, and the Bishop's curriculum drawn up to promote these purposes is interesting in view of the oral methods now widely recommended in the initial stages of Latin teaching. "The Schoolmaster," says the Bishop, "shall see that his scholars speak Latin diligently in all their talk and places, and the Usher shall likewise, so much as is possible. But at the least the Usher shall examine them that be under him himself, and teach them what everything shall be called in Latin, and see that one of them often oppose another in such-like words. . . . In the school, they that can must speak nothing but Latin." The "orders for the master and usher to keep in teaching" are given under separate heads as printed below. As regards the general method of instruction, the Bishop, while he lays stress upon the use of select vocabularies to special subjects and upon the grouping of connected ideas, is a believer in the old translation method. Some of the works which he recommends for use are absolutely unknown to the writer of this article, who has never come across "Ludnici Vinis," if his name be correctly transcribed. The rest of the statutes deal chiefly with the organisation of the school. The preposterous hours of teaching and the exiguity of the holidays are to be exampled in most other schools of the period. With these preliminary remarks, we may leave the Bishop to expound his method and its objects.

ORDERS FOR THE USHER TO KEEP IN TEACHING.

First, it is to be wished that none be admitted into the school but that can read; yet in great need the Usher shall teach such to read and learn the Short Catechism in English as have not learned it; and the other that can read and say it, shall enter first to the learning of the English grammar and rules, commonly called the King's grammar; and in learning to read much time is not to be spent, for the continual exercise of learning to read other things shall make it perfect.

As the young scholar is thus learning to decline a noun and a verb, the Usher shall daily exercise him with diversity of words in every comparison, declension, gender, tense, and conjugation, teaching him the English of every such Latin word; and examine him oft what is Latin for every such thing, that by this means he and others that hear may learn what every thing is called in Latin, and so be more ready to understand every word, what it signifieth in English, when they shall come to construction. As first to begin with Latin words for every part of a man and his apparel; of a house and household stuff, as bedding, kitching, buttery, meats, beasts, herbs, trees, flowers, birds, fishes, with all parts of them; virtues, vices, merchandise, and all occupations; as weavers, tanners, carpenters, ploughers, wheelwrights, tailors, tilers, and shoemakers; and cause them to write every word that belongs to one thing, together in order. And if this be done often and loud, that every one may hear and give ear, they will strive who shall learn and remember most Latin words, and will rejoice in it, one opposing another who can do the best.

After that the Usher hath thus exercised his scholars in learning Latin words, and practising his rules, and declining words, then he shall use them to learn some short wise sentences out of "Ludnici Vinis" or Cato, and examine him what part of speech every word is, to give a reason why every word is put in such gender, number, person, case, tense, and conjugation; and for better exercising of his memory, he must be often examined in saying them and his rules by heart; and for helping his memory (because youth soon forgetteth) he shall cause his scholars to write these words and sentences in a book, so that both he may see his scholar's diligence, and the scholar not forget that that he learned.

When the young scholar hath been thus indifferently well exercised in these under exercises, and can answer indifferently well to all his rules, he may then be brought to the reading of "Dialogi Sacri Castalionis," "Apothegmata Erasmi," or some witty dialogue in "Colloquia Erasmi" or Petrarch's "Dialogues"; that so with daily exercise in reading he shall wax perfect in understanding; for perfection is not to be looked for in these young years, nor in these grammar rules, but rather in observation, noting, and learning how the best Latin writers have used to speak, and place words and sentences; and these are not so scrupulously to be used and sticked at, but some boy may have a sentence or two as he is able to take any other as many of the same book or the like, that joining altogether everyone may have the whole by hearing his fellows, and the meanest wit may attain to great perfection of it (*sic*). And for the better encouraging of young wits, the Usher shall often take like sentences in English himself, and turn them into Latin, making his scholars to repeat them after him, and to make the like in Latin themselves, that the younger wits may learn to do the like by themselves afterwards, when they be thus led into it, by hearing him.

[1] I have to thank Mr. F. J. Bonner, the headmaster of Rivington and Blackrod Grammar School, for the loan of a copy of the school statutes.

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These two last chapters before, and the next following, shall be read openly in the school twice in the year, that is to say, the first day of the term when the Governors come to the school after Christmas, and Midsummer; so that everyone hearing his duty read unto him, may the more diligently learn and frame himself to the doing of it.

ORDERS FOR THE MASTER TO KEEP IN TEACHING.

After this, your scholars may be brought to the reading of Terence, his "Adelphi," or "Selectæ Ciceronis," and then to some verses, as "Psalmi Buchannini," "Epistolæ Ovidii," or "Ode Horatii," where both the matter and the metre is to be observed; and shall be a great help afterward to the making of a verse, which shall not be hard, if he then join that piece of his grammar rules withal, to know the quantity of syllables and kind of verses, after that he hath been exercised in making examples of every figure of grammar, and short epistles which he must do weekly, following Tully's examples. To all which aforesaid, "Erasm. Copiæ Verborum et Rerum, et de conscribendis Epistolis," will give a great light, and make the way more easy, if they be not so much tarried in, as laid before them like a pattern to learn, and to follow. But all these things must be gotten by often examining and diligent practising, which the Master must earnestly look that his scholars do, and help to declare and lead them in it.

When your scholars have been thus exercised in passing through these exercises before rehearsed, with often repeating them, and other like, to keep them in memory, their wits shall be well framed to greater things. And now they may enter one part of the day to the Greek grammar, and such a one as is the shortest and plainest, if they be meet and willing thereto, not meddling so much with variety of the tongues, as briefly setting forth the common tongue. And another part of the day to be exercised in Cicero "de Senectute et Amicitia"; and the eldest scholars may learn Tully's "Offices," and "Tusculan Questions."

After that they have been exercised with variety of words in their Greek declensions and conjugations, as was said afore, for the Latin grammar, they may have read unto them, first, "Tabula Cebetis" in Greek, and then some oration of Isocrates, and after Euripides. But weekly, besides this, they must write some epistles or verses, which they may more easily do, if they use often to turn their lectures into English, and then into Latin, again by other words to the same meaning, sometimes in verses, and sometimes in prose: and after turning Greek into Latin and Latin into Greek, and changing one kind of verse into another, and verses into prose, and prose into verse, observing the propriety of the phrase, the purest Latin words, and making the sentences full.

And now daily the Master must, more diligently than afore, teach his scholars to note and observe the figures of grammar and phrase, how the verbs and nouns be joined together after the fashion that uses; and how the epitheta and adjectives be joined with their nouns, after the fashion of Texton's "Epitheta" and "Officina."

That all these long, painful exercises may have some better show of learning, with stronger kinds of persuading and teaching others, the Master may now enter his scholar into the rules of rhetoric, in Tully's books ("ad Herennium"), to let him understand the divers kinds, and parts of an oration, giving him examples out of other authors, and how to furnish his sentences with figures of all sorts, as they be plainly there set forth in the fourth book, which will be more easy to follow by daily practice; for he that cometh thus instructed with plenty of matter that he hath read and noted in other books before, and hath been diligently trained in these lower exercises, which were but introductions to this kind of perfection, now he may use to declaim profitably on any questions propounded after the example of Aphthonius, Quintilian, or Seneca, and for example, follow and to see the practice of these Rules. It shall bring great light to declare unto them the parts of rhetoric, and elocution out of the orations of Tully, after the scholars have interpreted it themselves before the Master in English, without any other help, so that they may try their own wits in this doing, as "Actio in Verrem," et "pro Cluentio," "pro Lege Manilia"; which may be patterns to follow for his scholars, with Sallust and Virgil.

On Saturdays and Holy Day Eves, the Usher shall exercise his younger sort in learning their Short Catechism in English, in the Common Book, and the same days to all sorts the Master shall read Mr. Nowell's, or Calvin's Catechism, taught in Calvin's Institutions, willing the elder sort both to learn it by heart and examine them briefly the next day after, when they come to school again, before they go to other things, how they can say it, and shall commend them that have done well, and encourage others to do the like.

Both the Master and the Usher must see diligently that all and every one of their scholars, as their wits will serve, do exercise themselves daily in speaking Latin, and in making some wise sentences in Latin for the younger sort, or other divers matters, that shall be given them weekly; and the elder sort must be exercised in devising and writing sundry epistles to sundry persons, of sundry matters, as of chiding, exhorting, comforting, counselling, praying, lamenting, some to friends, some to foes, some to strangers; of weighty matters, or merry, as shooting, hunting, &c., of adversity, or prosperity, of war, and peace, divine and profane, of all sciences, and occupations, some long and some short; or else in making verses, orations and declamations, and noting the parts of them, in such things as they do read according to the rules of rhetoric; in turning also verse to prose, and contrary wise; out of English or Greek into Latin, or from Latin or Greek into English; out of orators into poets, and poets into orators; in rehearsing to their Master that which hath been read unto them in other good pure Latin words to the same purpose and meaning; in noting the phrase Capia Synonima, Contraries, the grammatical or rhetorical figures in words and sentences. The younger sort must be exercised in repeating their rules often, and the elder sort in teaching their inferiors; committing many things to memory, and writing them in their paper books, that so both the memory may be confirmed, and they may yearly see how they have profited, and then correct those things which were rudely and imperfectly run over in the beginning; for time and labour must perfect all imperfections. And these things shall better appear how profitable rather in exercising of them by practice, than declaring them by words.

A History of German Literature. By W. Scherer. Translated by Mrs. F. C. Conybeare. Edited by F. Max Müller. Vol. i., xv.+401 pp.; vol. ii., vii.+377 pp. (Clarendon Press.) 3s. 6d. net per volume.—This book is well known in the demy 8vo edition (the price of which is now 15s. net). The edition before us is cheaper, and will therefore be welcome to many. The appendices and bibliographies have been omitted, in order to keep the size and price of the volumes within reasonable limits.

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CHEMISTRY IN AMERICAN SECONDARY SCHOOLS.

By T. M. Lowry, D.Sc.
Westminster Training College.

A PAPER on recent practice and results in the teaching of chemistry in secondary schools of the United States was read by Mr. W. C. Geer at the tenth annual meeting of the New York Science Teachers' Association at the end of last year, and is printed in the April number of the *School Review* (University of Chicago Press). A synopsis of the paper should be of interest to science teachers in our own schools.

Mr. Geer states that it was his "pleasure" to read the chemistry note-books presented for entrance to Cornell University by those who entered without examination. With the devotion of an enthusiast he has tabulated the courses pursued in the different schools and photographed specimen pages of the different types of note-books. His observations make it clear that the American teacher suffers from the same troubles which pursue his English colleague, and that vicious methods of accelerating the pupil's progress are, possibly, commoner in the United States than they are in England. Perhaps the most harmful method consists in the use of a printed text-book in which the alternate pages are left blank in order that the pupil may record the fact that he has done that which he was told to do. Two examples of this type are given. In the first the pupil records his observations with an economy of labour that must have delighted his eager soul—"Followed instructions. A black, mirror-like stain of metallic arsenic was deposited upon the porcelain." The second example is like unto the first—"I set up the apparatus as directed, and mixed the sodium acetate, sodium hydroxide, and quicklime, and heated them. I collected the gas, and found it (was combustible) burnt. . . . I concluded it was methane." It is evident that experiments 35 and 71 would not be likely to make any lasting impression on these obedient workers, and the argument that a gas which burns must be methane shows a readiness to jump to conclusions that is quite characteristic of those who adopt this method of working.

In another curious type of note-book the page is divided into six compartments labelled "Apparatus," "Conditions," "Reactions," "Sketch of Apparatus," "Observations," "Conclusions," whilst a similar classification is frequently made by the pupil himself in the margin of the note-book. These elaborate arrangements for economising time and securing uniformity of arrangement not only reduce the amount of thinking required of the pupil, but encourage a slovenly style of writing which would not be permitted in any other branch of school work, and certainly ought not to be sanctioned in the laboratory. Happily, some of the American schools have adopted the practice, with which English teachers are already familiar, of treating the laboratory note-book as one of the most valuable means of forming a good literary style, and of training the pupil in habits of clear and accurate description. In such cases the description of the experiment is made to include all the essential ingredients—motive, description, observations, and conclusions—but these are left to display themselves unlabelled, as part of a continuous, literary narrative. The importance and, indeed, the necessity of this training are clear to all those who, like the American author, have to continue the teaching begun in the schools.

One other point is worthy of mention. In one-third of the New York schools the laboratory work is taken in periods of three-quarters of an hour! Under such conditions it is not to be wondered at if the teachers are driven to adopt pernicious methods in order that their pupils may be able to report progress of any kind before the bell rings for the next lesson.

THE LATE MISS BEALE.

By Mrs. Cloudesley Brereton,
Formerly Acting Principal of Homerton College, Cambridge.

THERE was no more striking figure among the true pioneers of girls' secondary education in England than Miss Dorothea Beale, whose death on November 9th caused a national loss.

Miss Beale, born in 1831, was the daughter of a surgeon, himself keenly interested in educational, sociological, and literary matters. The women of her mother's family were remarkable in their day for scholarship and strong character. This environment undoubtedly influenced the growing child, though it did not protect her from the "noxious brood of catechisms" of the day, Mangnall's questions, and the like. These machines, which had succeeded in grinding all originality out of generations of girls, only served to make Dorothea Beale leave school with an unsatisfied desire for fuller and more organised knowledge.

She taught herself Euclid, read widely, attended lectures, studied mathematics under the Gresham Professor of Astronomy at Cambridge, and became a student of Queen's College, Harley Street, when it was opened in 1846. She there came under the influence of Trench and Frederick Denison Maurice. The educational facilities at Queen's College were to her the revelation of a new world, after her conventional and quasi-conventual bringing up. She was afterwards mathematical tutor at Queen's, and her enthusiasm led her to visit the schools and colleges of foreign countries in the vacations.

In 1858 the headship of Cheltenham College became vacant. There were but sixty-nine pupils, and after being in existence nearly four years the outlook of the school was disappointing. But before many years passed Miss Beale had, by tactful steps, entirely remodelled the curriculum, started St. Hilda's Hall, Cheltenham, a depart

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ment where she herself trained her teachers on her own lines, and founded besides St. Hilda's Hall, Oxford.

One illustration will show with what prejudices she had to contend. Realising how the study of the exact sciences would help to balance the minds of girls, Miss Beale decided to teach geometry. But she feared that word on the prospectus would close the school, so she had to include the necessary teaching under the comprehensive title physical geography, there being no objection to geography, as few boys studied it.

In 1865 Miss Beale, with Miss Davies and Miss Buss, was called upon to give evidence on the secondary education of girls before the Schools Inquiry Commission. Thoughtful and active-minded people were alarmed by the report of the Commission, and awakened to the necessity of establishing good secondary schools for girls throughout the country. The reformers found in Miss Beale a valuable ally. Not the least important outcome of the inquiry was the successful establishment of the Girls' Public Day School Company, and the creation of the famous Haberdashers' Schools. One of the latest foundations for girls' education, St. Paul's, was also largely due to her untiring efforts and those of Sir Joshua Fitch.

In more ways than one she recalls Thring of Uppingham, for her life-work was, after all, the development of Cheltenham College. Its growth may be best measured by the facts that when founded its total capital was only £2,000, while at the time of its year of Jubilee the annual income alone was £60,000.

To many Miss Beale was rather a one-sided advocate of women's education; but those who knew her best are well aware how groundless was the supposition. Though she herself was "married to the College," to use her favourite phrase, her chief ideal was to turn out truly womanly women.

THE PROMOTION OF NATURAL KNOWLEDGE.[1]

By Prof. H. E. ARMSTRONG, Ph.D., LL.D., F.R.S.

THIS book is to be recommended to readers of THE SCHOOL WORLD, both ordinary and extraordinary, as one to be perused carefully and pondered over at leisure. Mayhap its tongue will be a strange one to most, yet worth the trouble to master. Its face is fair to look upon. Not trying to the eyes to read but printed very clearly, with lines ranged wide apart—doubtless so that the student may have full opportunity of reading much in between them—it is illustrated with reproductions of pictures of great men which might well be framed and hung up on school walls, as a contribution towards that "thinking in shape" Thring wisely laid so much stress upon and which most of his colleagues therefore, out of what Mark Twain might designate sheer cussedness, have quite carefully avoided. Most charming of all, perhaps, are the "initial designs" by the accomplished wife of the venerable author. Among these is one (obviously allegorical), of special interest to schoolmasters, of the City of London School (emblematic, it is to be supposed, of our English secondary schools) wrapped in the deep gloom of a decadent, *wissenschaftloses* curriculum; another, it may be imagined, typical of the school of the future, depicts this as an elaborately constructed beehive carrying the motto *Nullius in verba*—busy bees typifying pupils as doers not dreamers. It is a book to place in the library of every school and one which might be used with profit as a reader in the upper forms—as it goes far enough back (to Charles II.) to be reckoned among literary works proper for those whose minds are thought to be fitly kept free from all taint of modern knowledge. The Board of Education will do well to include it in the official course of English literature prescribed for grant-earning schools.

It was a happy thought on the part of the author, the gifted and distinguished astronomer, Sir William Huggins, the late president of the Society, to republish annotated excerpts from the addresses which he delivered during his term of office. Redolent of artistic feeling and bearing evidence of culture on almost every page, the book may serve to hold up the mirror to the narrow humanists who, unlike our Primate, far from mistrusting, are in full sympathy with—

> "the poet who discerns
> No character or glory in his times
> But trundles back his soul five hundred years
> To find a hero or an enterprise."

The early history of the Royal Society is briefly sketched in the opening chapter. Founded two and a half centuries ago, particularly for the study of what was then called the New Philosophy or Experimental Philosophy, its growth has been coincident with that of experimental science. Sir Isaac Newton was president of the Society during twenty-four years. He presented to the Society in 1671 a reflecting telescope made with his own hands which appears to have been the first reflecting telescope actually constructed and directed to the heavens. Another of its most distinguished presidents was Sir Humphry Davy, the discoverer of the compound nature of the alkalies and alkaline earths and the inventor of the safety lamp. Faraday's marvellous researches, which have made electricity the servant of man, were all described in memoirs printed in the Society's *Transactions*. These are things which English boys might well be proud to know of.

The rest of the book should be for the most part serious reading for schoolmasters—especially the sections which respectively bear the headings: I. "The Supreme Importance of Science to the Industries of the Country, which can be secured only through making Science an Es-

[1] "The Royal Society or Science in the State and in the Schools." By Sir William Huggins, K.C.B., O.M., &c. xv.+131 pp. (Methuen.) 4s. 6d. net.

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sential Part of all Education"; and IV. "On the Profound Influence which Science, represented by the Royal Society, has had upon the Life and Thought of the World; and the Place of Science in General Education."

Prophetic passages abound throughout the book, such as the following:—

"A primary and immediate need of this country is the putting of more science into the education of the country. Not the teaching of the mere facts of science—which by itself is of little good—but the training of the intellect by strict scientific methods and principles.

"In the coming century the race will not be to the country of the athlete nor to the country of the classicist but to the country whose men, having been trained under the rigorous methods of science, have the knowledge and especially alertness of mind to enrich themselves out of the open and inexhaustible treasury of Nature" (p. 36).

"I do not surely exaggerate the importance to the nation of the existence of the Royal Society, if I claim for it to have been, during the last two centuries, the faithful guardian of the true Palladium of the Empire, too long neglected and even forgotten by its peoples.

"*Scientia vinces*—whether it be on the field of battle, on the waves of the ocean, amid the din and smoke of the workshop or on the broad acres under the light of heaven; and assuredly, in the future, even more than in the past, not only the prosperity but even the existence of the Empire will be found to depend upon the 'improvement of Natural Knowledge'—that is, upon the more complete application of scientific knowledge and methods to every department of industrial and national activity.

"It is obvious that it must be so, for it is only through an increased understanding of what are called the laws of Nature—the sequence and the interaction of natural phenomena—that we can hope to bring Nature into complete subjection and to make use of her illimitable forces to work out our own ends" (p. 116).

Coming from a man who has no axe to grind but is merely a sympathetic onlooker, deeply desirous of directing his countrymen into right paths, such expressions are of no slight significance. Teachers who are in some degree mindful of their duty to the State will do well to give heed to the considered words of such a man.

A STORY-BOOK OF ENGLISH HISTORY.[1]

REMEMBERING "Kim" and the "Just So Stories," we take up Mr. Kipling's interpretation of certain phases of "Old England" with no ordinary eagerness. We are not disappointed. Indeed, it may as well be said at once that "Puck of Pook's Hill" is a work of genius. This does not mean that it is above criticism, but it means that in a high and notable way it stands by itself. There is no other book like it, and no one but Mr. Kipling could have written it. Most people know what Mr. Kipling can be at his best, but this book has a charm peculiar to itself. For here the creatures of the author are not beasts of the jungle, or lamas, or motors, but the people of our own past, the dwellers in the dim, far-away uplands of English history. The theme is handled with curious art. The historical technique is remarkable, although, unfortunately, the battle of Hastings has to appear disguised as the battle of Santlache; the device of Puck and the two children, Dan and Una, whereby the whole book is knit together, is beautifully carried out, and charming in itself. But as story follows story one feels that even more notable than such things is that queer and subtle intimacy of the author with the undersides of character. History-books deal chiefly with the public and overt aspects of character, but most of the life of a man or a nation is not lived either in public view, or for the public edification. The true realm of human activity is always behind the scenes. Here lies Mr. Kipling's mastery. He has immense sympathy with, and understanding of, this vague half-illumined region in the historic being of men and nations. He moves amid the twilight of long ago, and throws his lamp on what "must have been." He answers the speculation of the child and of the elder, "I wonder how it felt to be alive then." He recovers for us the personal drama of the past, not as associated merely with the great ones of the earth, but as associated with any kind of person who happens to come handy to his purpose; and thus he often finds his reward where his predecessors in historical romance have not ventured to penetrate.

Opinions will vary as to the relative merits of the ten stories which the book contains. Perhaps the most brilliantly coloured are the three which refer to the Roman occupation. Yet these stories are not perhaps the best. There is a flavour of modern imperialism about them which, though not distasteful, makes them less convincing historically. The Great Wall, too, is overdone. It was an impressive work, but it scarcely had the Babylonian bulk and thronged excitement of Mr. Kipling's narrative. On the other hand, the three stories, "Young Men at the Manor," "The Joyous Venture," and "Old Men at Pevensey," present with extraordinary vividness the kind of incident of which the complex drama of the Norman Conquest must have been compacted. How delightful to realise that the trite maxims of constitutional historians rest upon personal character and experience! For example, we can all recall familiar sentences which tell us that the English have always gained their political reforms by appeal to custom and precedent. Here is the idea as it occurs in "Young Men at the Manor."

"'The English are a bold people. His Saxons would laugh and jest with Hugh, and Hugh with them, and—this was marvellous to me—if even the meanest of them said that such and such a thing was the Custom of the Manor, then straightway would Hugh and such old men of the Manor as might be near forsake everything else to debate the matter—I have seen them stop the mill with the corn half-ground—and if the custom or usage were proven to be as it was said, why, that was the end of it,

1 "Puck of Pook's Hill." By Rudyard Kipling. 306 pp. (Macmillan.) 6s.

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even though it were flat against Hugh, his wish and command. Wonderful!'

"'Aye,' said Puck. . . . 'The Custom of Old England was here before your Norman knights came, and it outlasted them, though they fought against it cruel.'

"'Not I,' said Sir Richard. 'I let the Saxons go their stubborn way, but when my own men-at-arms, not six months in England, stood up and told me what was the custom of the country, *then* I was angry.'"

The historic reverence for custom, and the assimilative capacity of the race, could not be better presented. In the same story we see how Norman and Saxon came to combine together to protect common property, in this case the swine of the manor. The same idea of Anglo-Norman unity recurs in "Old Men at Pevensey," in which Pevensey itself gains upon the imagination as the Gate of England. Picture follows picture. The Great Wall flashes into reality; we see how the legions marched, and what a Roman road was like; we understand what was the fear of the Northmen—"the raven-winged ships from the North, where Rome does not rule." In "Hal o' the Draft," a story of a craftsman that seems to move with an easier motion than the rest, the old and deep-set passion of the English for the country life is justified by the description of the old farm, and what it meant for those who dwelt there. "Dymchurch Flit" is in another strain—eerie, regretful, humorous, significant in its sense of what was lost as well as gained by the intellectual and religious abjurations of the sixteenth century. It shows us Mr. Kipling's wizardry at its highest cunning, for we feel that the truth is never far from his veil of enchantments and fantasies.

The stories are strung together, in Mr. Kipling's way, by songs. Of these the "Children's Song" at the end will, it may be predicted, attain permanent currency. The rest are not particularly remarkable, except, perhaps, the "Smugglers' Song," which is entirely delightful, and, as everyone must see at a glance, is in rhythm and "go" exactly what it ought to be.

Here, then, is a book which is both literature of power and literature of instruction. We may welcome it as a story-book; we may welcome it as an aid to history teaching. But if it is to be pressed into the service of the pedagogue, one or two cautions may be given. "Puck of Pook's Hill" is not intended for the nursery. Dan and Una are not babies. Some sense and knowledge of things is presupposed. So magical is the story-teller's art that even a little child may take pleasure in hearing the book read, but the joy of it will be far greater if the book is reserved until some knowledge of English history has been gained in other ways. Again, it is to be hoped that this book will never become a "lesson book." One by one books intended purely for recreation and delight are being prejudiced and debased in the eyes of their young readers by associations with task-work and punishment. The copyright laws, fortunately, will long preserve Mr. Kipling's stories from the annotator and his "abridged edition." But the right course with "Puck of Pook's Hill" is to keep it outside the schoolroom altogether. Put it in the way of boys and girls, and let them read it for pleasure. Left to itself, it will find readers enough, and such readers will discover of their own motion a new interest in their history lessons.

THE LITTLE CHILD.[1]

THE little child has been for years under the microscope. He is the special prey of the man of science, and no doubt he deserves it, for in him are locked up our secrets. But the psychologist is running the more exact man of science hard, and it is not an uncommon thing to find whole chapters of books which are simply printed cinematographs of what a baby does. The ordinary reader stands in amaze, the ordinary teacher smiles, and the ordinary mother, when she is presented with one of these chapters, throws the book impatiently away. It is from America chiefly that the microscopic study of the infant comes, and it is to be hoped that positive results will follow. Thus, "First Steps in Mental Growth," by Prof. Major, is really nothing but a detailed account of Prof. Major's baby, and solemnly we are asked why the baby ("R." is his name) dislikes the slamming of a door. It is of no use to say *omne ignotum pro terribili*; it is of no use to refer all fears of a child to the instinct of self-preservation; nor does it seem to be germane to the question to inquire what "R.'s" parents are like, and what their parents were like. The book is interesting, and specially so to those who work on the same lines; and when a large number of such books have been amassed there may come some generalisations. It may be found then that these very generalisations have been in the possession of all mothers for centuries.

Of a very different character is the hopelessly unscientific volume called "Old Maids' Children," by Edith Escombe. It measures no child; it does not record at what month Johnny saw himself in the looking-glass; nor does it say on which of three occasions Johnny was afraid or not afraid of the pug-dog. Instead, it tells us that courage may be taught; it condemns the increase of neurotics in the nursery; and it offers a suggestion for new nurses, new carpets, and new toys. It is a singular plea, in very simple language, printed very well and clearly, and prefaced by one admirable page, a plea for self-control. We don't think Miss Escombe would laugh over the scientific study of the little child and over the crammed curriculum of his elder brother. Indeed, we are sure she would cry—in secret, for of crying in public she does not approve. Whoever would

1 "First Steps in Mental Growth." By D. R. Major. 1-350 pp. (Macmillan Co.) 5s.
"Old Maids' Children." By Edith Escombe. 1-275 pp. (Swan Sonnenschein.) 3s. 6d.
"The Child and the Curriculum." By Catharine Dodd. 1-172 pp. (Swan Sonnenschein.) 2s. 6d.

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ask for encouragement in the humane task of bringing up little children in a wholesome way would do well to read this book with its ill-fitting title, "Old Maids' Children."

The elder child is catered for (sumptuously) in "The Child and the Curriculum," by Miss Dodd. It is a pity that the interesting part of the book, the antiquarian part, is so very scrappy. Why did not the talented writer leave it to someone else to write one more work on curricula, and give us a really good production on old school-books and old school-thinkers? The field is almost untilled, except for Hazlitt, Tuer, and Furnivall. However, we have to review what is there, and we are, of course, disappointed. Why is the teacher so terribly anxious to run his child in a rut? If six distinguished men of to-day were to be asked their opinion of their own early school-days, should we not hear scathing condemnation of the teacher and the rut? After all, what is a "curriculum"? Only a racecourse, narrowed down, of set length and fixed boundaries. And in it teachers run, and out of it little children are always trying to escape. When will people learn to trust the teacher more, and to believe that it is the teacher, and not the curriculum, that brings out what is in the child? Thus in this book we read of *devices* to make instruction interesting—*because we have not obtained our teacher yet*; we see a carefully-mapped-out lesson on Solomon and on the study of a Greek boy—mapped out *because we have not obtained our teacher yet*. And this pemmican will not produce him.

In Miss Dodd's book there is scarcely a word about the body, the only child's asset of which we really know anything; the best book written for children on the Old Testament is unnamed, while the work of Canon Ottley, manifestly not for children, is highly praised; and, as a specimen of what the teacher may accomplish, King Solomon (perhaps the most unsuitable study for children in the whole Bible) has a series of lessons set out for him in which the salient features of his life and the associations clinging to his name are ignored.

We are thankful to the author for the architectural lessons and for her half-outspoken condemnation of co-education—half-outspoken because, being a lady, she dare not say her whole mind in print. The book bristles with good advice, with good time-tables, and with good theories—all dedicated to the incompetent teacher.

The perusal of these three works suggests that, if children knew and could be allowed to protest, they would take Miss Escombe's book in their hands and, showing it to the scientific microscopists and makers of curricula, would say, "We have heard enough of Froebel and Herbart, as now interpreted; can you not give us a little—love?"

How to Keep Well. By Dr. Andrew Wilson. 140 pp. (Chambers.) 1s.—An interesting little book, which might be read with advantage by everyone. The author's name is sufficient guarantee that the statements made are accurate and to the point.

THE BIRDS OF ARISTOPHANES.[1]

MR. ROGERS again presents us with one of his delightful translations, for it is the translation which makes the merit of this work. There is useful matter in the introduction and in the notes, which are original and suggestive; but we do not feel so sure of Mr. Rogers the critic or the grammarian as we do of Mr. Rogers the poet. In criticism, he is remarkable for independence and good sense; but he is not a diviner like Bentley or Cobet; his mind is rather literary. We are glad that he has restored the true name to Peisthetairos; and it is just in such cases, where the public have been content to follow like sheep into an obviously wrong path, that Mr. Rogers is useful. The phrase μάλλά (109), for example, clear as its meaning is, presents more than one problem for solution, and the MS. variants are instructive; but none of these points are touched on, the variants being just recorded in the critical appendix. This is a typical instance of Mr. Rogers's point of view. He keeps the right reading, and gives materials for anyone who prefers a wrong one; but he passes on without either defending his text or explaining the use of μὴ (or μά) and the vowel of the crasis. We are not in any way complaining of this; we mention it merely to show what the reader will find in the book, and what he will not. The critical notes, generally without comment, expose the shameless tampering of editors with the text, or their sheep-like imitation one of another. The notes are at their best when (as on 591) the editor exposes some ignorance of common facts which may be at the bottom of conjectures.

A useful account is given in the preface of the birds described by Aristophanes, which are identified (as far as possible). We may mention, by the way, that δρῦς originally meant a tree, so that δρυκολάπτης has no special reference to oaks. The old sense remains in ἀκρόδρυα, "fruit trees." There is also an excursus on the musical representation of birds' notes. The running commentary is mainly of a literary kind; it explains the dramatic points and situations, and quotes illustrative parallels.

But Mr. Rogers's fame rests on his translation; and this time how brilliant a subject he has! Elsewhere, Aristophanes is witty and pretty—his choruses are always good, always have a fine lyrical rhythm; but the plot or subject may be topical, or vulgar. But where has the poet a plot so fitted for the exercise of his powers? Let the Germans, if they will, see an elaborate political allegory in the *Birds*. Mr. Rogers will have none of it, and we are content to follow him. The *Birds* is of imagination all compact, a thing of beauty and grace incomparable—satirical it is true, but the pervading atmosphere is of bright irresponsible happiness. And Mr.

[1] "The Birds of Aristophanes." The Text Revised, with a Translation into corresponding Metres, Introduction, and Commentary. By B. B. Rogers. xcii. + 305 pp. (Bell.) 10s. 6d.

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Rogers is here at his best. Others may rival him in the dialogue, but, we think, none in the lyrics. With his inexhaustible stock of rhymes and his irrepressible high spirits, he carries his readers away. We are heartily grateful to Mr. Rogers for his translation, and wish more power to his elbow.

SECONDARY EDUCATION IN SCOTLAND.

THE second report of Dr. J. Struthers, the secretary to the Scottish Board of Education, deals primarily with secondary education in Scotland in 1906, but it contains much that is of value to schoolmasters and schoolmistresses teaching in secondary schools, wherever these may be situated.

Following our usual practice, we have, in selecting the following paragraphs from the Blue-book (Cd. 3207, price 4*d*.), given prominence to remarks on methods of teaching the various subjects of the school curriculum, believing that teachers find these notes of service in class-room practice.

ENGLISH.—If it cannot be said that the complex problems presented by the teaching of English have been satisfactorily solved in our schools, progress in the right direction is certainly being made. History and geography have long been regarded as mere appanages of English proper. There is, no doubt, an intimate connection between English and history on the one hand, and between history and geography on the other. The due co-ordination of the three must always form a prominent feature of every well-ordered scheme. Equally, however, must their independence be realised if they are to be adequately taught. English, viewed under the aspect of language-study, has but little affinity with geography as linked to practical science.

In many schools the literary side of the teaching is undoubtedly very weak. Even the knowledge of literary history incidentally revealed was often vague and chaotic. It is to be feared that there are not a few teachers of the subject who have a very imperfect realisation of the ends at which they ought to aim. To them I would commend the weighty observation of one of our most experienced advisers:—

"There are three points which clearly need to be emphasised in the teaching of literature—a general knowledge, accurate as far as it goes, however little way it may go, of the great names and movements of English literature; a feeling for beauty in language and in rhythm; and some sense of what Matthew Arnold used to call 'architectonics,' the operation of the intelligence in works of creative imagination. None of these things, in simple guise, is beyond the capacity of boys and girls of seventeen. Without them I do not know what the teaching of literature means."

It is plain from the work done by candidates that the study of English in its vocabulary and idiom is still very far from the precision that has been attained in the study of the classical languages. Drill in analysis and parsing is conscientiously done. But these exercises are too often regarded as ends in themselves, whereas they should be purely ancillary. Like paraphrasing, they should serve merely as aids in the cultivation of correct understanding. Taught, as they often are, dogmatically and without regard to historical grammar, they have a numbing effect on the linguistic sense of the pupils. Let me quote some interesting remarks on this point by the chief examiner:—

"Anything archaic in speech or syntax, however common in classic authors, seems to baffle the candidates; and this, like some other weaknesses, I attribute to their unfamiliarity with literature. The examination helps to form the speech of a people. Clearness, logic, and exact modern usage seem to be well taught. The danger lies in the other direction; the best English speech has always preserved a freedom and elasticity which the grammar lesson is apt to impair, and which can be learned only from the reading of the best authors, or from conversation with the best speakers. With the progress of popular education a kind of miasma of pedantry is creeping over England and Scotland. There is no practical cure for this save in literature. In our schools the subjunctive is moribund or dead. But it lives in good writing, and will be revived by the study of good writing. And so also with other forms which are killed by the unintelligent and dogmatic teaching of logical grammar. 'This House to let' is good English. It is being driven out by 'This House to be let,' which is pedantic, bad English."

HISTORY.—History as studied in Scottish schools is practically English history from 1066 to 1815. Within these limits there is sound teaching of the facts and some appreciation of the picturesque side of the past, although in the higher grade one might not unreasonably look for greater power of generalisation and of realising causal connection, and for a more genuine interest in the economic and constitutional aspects of the subject.

The lack of comprehensive grasp and the apparently entire neglect of Scottish history are, however, grave defects. As to the existence of these weaknesses, there can be no manner of doubt. I have been much impressed with the remarks made upon the latter point by one of our most trusted advisers, himself an Englishman:—

"I must once again animadvert on what I cannot but regard as the most discreditable ignorance of Scots history universally shown by the candidates. The parrot-like use of the word 'Britain' seems to me to have done much more harm than good from the point of view of Scotsmen who take a pride in their separate history. Because we must be careful to talk of the British at Waterloo and Inkerman, the children make a point of talking of the 'British' victories at Crecy or Agincourt, and take satisfaction in the idea that William of Normandy conquered 'Britain.' The essays on the Stuarts revealed blank ignorance of Scots history before the union of the crowns. To most candidates James VI. was as devoid of parents as Melchisedek. . . . Whatever may be said in general about 'particularism,' it is surely worthy of note that Scots children, whose work gives ample evidence of Scottish idiosyncrasies and even prejudices, are totally uninstructed in the history of Scotland. I do not know what text-books are in general use, but I am quite sure that they were written entirely for the benefit of English children, and I am also sure that the teachers of the candidates whose work I have seen are either unable, or think it unnecessary, to supplement the contents of those books by telling their pupils anything about the history of Scotland."

What is wanted—and wanted elsewhere than in Scotland—is that the history of our country should be studied, not from an English or a Scottish or an Irish, but from a truly British point of view. The pupils should be taught to have regard to the development of these islands as a whole. This is the essential. Over and above, however, for Scottish children, such work should be supplemented

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by some more detailed information about Scotland; and for the older pupils the lines might well broaden out gradually into a general view of the great movements of European, if not of universal, history.

Geography.—It becomes increasingly evident that geography is still very far from becoming the educative subject which it is capable of being made. In most schools it seems to be conscientiously taught so far as bare facts are concerned. But better organisation of the course is wanted almost everywhere, and practical instruction is virtually unknown. The specially qualified teacher is urgently called for. Questions demanding generalising power were left untouched. Isolated details were baldly stated, and there was little attempt at discussion. Physical or realistic geography, which is nothing but an extension of nature-study, obviously requires to be encouraged.

Classics.—Tradition still forces into the Latin classes a considerable number of boys and girls who would derive more lasting profit from an easier or, at all events, from a different subject. From this point of view the continued popularity of the language is not entirely matter for congratulation. Managers and parents have yet to realise that, if Greek is for the few, even Latin is hardly for the many. On the other hand—and this is but a particular application of a principle to which I have already referred—those pupils who are gifted with a genuine aptitude for classical studies ought to be at liberty, during the last three or four years of their school life, to devote much more time to ancient languages than is usually possible at present. Not until that principle is more widely accepted will the general level of classical learning in Scotland be appreciably raised.

It is gratifying to note that there is general agreement regarding the high average of qualifications possessed by classical teachers in secondary schools. Formerly there was a vague belief that a limited range of knowledge was sufficient to justify a man's being entrusted with the care of a class of beginners. That dangerous heresy is rapidly disappearing. It is becoming more and more generally understood that scholarship must begin at the beginning. And it seems certain that an effort after better methods is discernible almost everywhere. But a great deal remains to be done. Grammar is still too generally taught as an end in itself, and, in Greek at least, old-fashioned grammatical text-books have not quite lost their vogue. Quantities are receiving much more watchful attention, with the natural result that scansion, as tested by the written papers, is gradually becoming less unsatisfactory. But the necessity for a uniform system of pronunciation is not yet universally admitted. Repetition is practised with greater regularity. It is still, however, too frequently regarded as something outside of the ordinary work—a display for special occasions. As a matter of fact, it is intimately connected with the intelligent reading of the ordinary text, and is only one phase of the training of the ear—an aspect of linguistic study which is very imperfectly understood. The most serious blemish continues to be the neglect of *Realien*, the lack of a proper background of history and antiquities. The teachers are no doubt sorely tempted to err in this way. But they would probably find it better, even from a strictly utilitarian point of view, to do more to interest their pupils in the life and literature of Greece and Rome. Here again, however, the real remedy will be found in a frank recognition of the necessity for concentration, if Greek and Latin are to get their due.

French.—It would appear that teachers still need a great deal of help towards understanding the real aim of modern ways of treating foreign languages. Many do not yet realise that, if success is to be attained, the use of the "direct" method must be whole-hearted, energetic, and thorough-going. There must be no slovenliness, no countenancing the idea that the precise ending a speaker gives to a word is not a matter of any particular moment. Neglect to guard against this danger inevitably brings the method itself into discredit. As soon as the pupils put pen to paper, the defect betrays itself in false concords, in wrong genders, and in gross syntactical blunders. Yet these are the very things that, properly applied, the direct method is so well calculated to banish from the schools.

Several inspectors report that, in their opinion, formal composition is overdone. It has, of course, a place of its own in every properly organised scheme of language study. At present, however, there would seem to be too much attempted in this direction, and too little attention paid to "imitative" composition—that is, composition based on material with which the pupils are already familiar. Retranslation, for instance, is almost unknown as a systematic exercise. I am glad to believe that the amount of literature read is increasing. But even more time might very profitably be devoted to what must always be a most important side of linguistic study.

Pronunciation continues to improve. In this connection I would like again to refer to the arrangements for an interchange of student-teachers between France and Scotland. The system is developing rapidly along satisfactory lines. During the past session eighteen young Scottish teachers were sent to gain experience in the schools of France, abundant leisure being allowed them to improve their own knowledge of the foreign language. In the same way seven young French teachers were received in Scottish schools, and the enlightened policy of those managers who lent their assistance in the matter has, so far as I can learn, been amply justified.

Generally it may be said that in regard to French we are in a stage of transition. The leaven of improved methods is steadily working, but its effects can hardly be expected to make themselves fully felt for a year or two to come. The written papers furnish clear proof of this in more than one respect.

German.—One regrets to find that in a large number of schools, perhaps indeed in the majority, German stands on a somewhat precarious and uncertain footing. In almost all cases the number of pupils studying the language is small, and too often the time devoted to it is inadequate. Here, as in French, oral methods are making decided headway. It is, however, but too clear that the principles essential to their successful application have not yet been thoroughly assimilated. Oral drill is not systematic enough, or else it passes to the opposite extreme and becomes stereotyped within the limits of a few stock questions and answers. And there should be more repetition. Pronunciation touches a fairly high level in some schools. But it is not yet grappled with on scientific principles, as it ought to be at the very outset. The new sounds cannot all be learned by imitation alone, and teachers would find that in German, as in all other languages, even the most elementary knowledge of phonetics could be turned to excellent account. As is only natural where the time is unduly limited, the range of continuous reading overtaken is seldom sufficiently wide.

Mathematics.—There seems to be no doubt as to the beneficial effect that is being produced upon mathematical study by the infusion of modern methods into the teaching. One of the most immediate results has been a marked increase in the popularity of the subject. Whereas it was

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common a few years ago for girls in secondary and intermediate schools to omit mathematics entirely from their curriculum, such an irrational proceeding is now the exception. Whether the full value of the new aspects of the work has yet been adequately realised, is much less certain. But at least it is a clear gain that the interest of the pupils has been quickened, and that the essential unity of the different branches is becoming more and more generally apprehended. The ultimate educational advantage ought to be great. What has hitherto seemed meaningless to pupils can now be made plain by practical demonstration wherever the practical side of the teaching is properly correlated with theory. It is in the neglect of such correlation that danger lurks.

As regards arithmetic, manipulation is usually accurate, although here and there the need exists for stricter insistence upon accuracy of computation. Principles are not always well understood, and in some quarters mechanical methods continue to be employed. On the whole, however, it may be said that greater attention is being paid to securing an intelligent appreciation of the processes involved as well as to insisting on a proper apprehension of those generalisations, the true understanding of which makes easy the transition from arithmetic to algebra. Decimals are not used nearly so freely or so naturally as is desirable. It appears that many pupils still prefer the most unwieldy vulgar fraction to the simplest decimal. This is a very serious weakness.

In algebra the attempts to blend the new method with the old are frequently too crude. Some teachers begin the subject in the traditional manner, and do not make use of generalised arithmetic until near the end of the course. As a matter of fact, ordinary arithmetical notions should be regularly employed from the beginning, and simple problems of an interesting type should be prominent from the outset. Graphical studies are now pursued almost everywhere, and algebra has benefited materially by the change. But in some schools the introduction of graphs is postponed until too late a period in the pupil's career. They should make their appearance as early as possible. The first practice should be upon curves the direction of which changes continuously. Abrupt change requires an amount of discussion which it does not always receive, while curves consisting really of a number of isolated points are seldom adequately explained.

In geometry the sequence chosen is not always well adapted to give due prominence to the two aspects of the study. The teacher should aim at following a logical course in which each inductive proof shall be followed as soon as possible by the deductive. By some of the best teachers this has been done with remarkable success, and in such a way as to show how needless is the fear that geometry treated practically will lose its value as a means of mental discipline. There might be ground for that apprehension if practical and experimental work were pushed to an extreme that left no room for logical deduction, and if pupils were allowed to leave school unable to carry out geometrical reasoning except with the aid of rule and compasses. But, up to the lower grade stage at least, there is no such risk involved in the use of the newer methods.

SCIENCE.—Experimental science continues to be developed on sound and well-considered lines. In both secondary and intermediate schools the course at present being followed embraces, as a rule: (1) measurements of length, area, and volume; (2) elements of (*a*) hydrostatics, (*b*) heat, and (*c*) light; (3) elementary chemistry. Where more than three hours a week are given to the subject, or where the curriculum includes a fourth year of study, magnetism and electricity are usually taken up. Too often, however, these later studies appear to be entered upon with insufficient mathematical knowledge and without the necessary preliminary practical acquaintance with dynamics upon which they are so largely dependent. The result of this is never satisfactory.

A close correlation between mathematics and experimental science is being generally maintained. Some parts of the earlier work in science, *e.g.*, measurements of length and area, are now commonly dealt with in the mathematical class-room, so that the necessity for their continuance in the laboratory is steadily diminishing. Nor is this the only direction in which the time given to science is really time spent on mathematics. The calculations which are necessary in connection with the various experiments furnish admirable practice in securing expertness and accuracy in arithmetic. The opportunity afforded for acquiring familiarity with decimals is a specially conspicuous advantage.

In a few of the schools an attempt is made to cover rather more ground than the number of hours allotted to the subject would warrant. Fuller experience may be expected to remedy this. Inadequate discussion of experimental exercises is another defect which has to be watched carefully.

THE TYPE IN SCHOOL-BOOKS.[1]

By R. T. WILLIAMSON, M.D. Lond., F.R.C.P. Lond.

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THE vision of many school children and college students is defective owing to myopia. In a private boys' school which I recently examined 23 per cent. of the scholars were myopic; and of fifty-five students who have just entered the department of education of the Victoria University (for training for school teachers) fifteen are myopic —*i.e.*, 27 per cent.

Though there is a difference of opinion as to the production of myopia, there can be no doubt that prolonged eye strain during school life often causes or increases this defect. Many ophthalmic surgeons regard this eye strain as the most important of the causes of myopia. The whole subject has been carefully studied by many observers, and by no one more thoroughly than by the late Prof. Cohn, of Breslau. Space does not permit any account of his conclusions,[2] but they furnish the strongest evidence of the injurious influence of severe eye strain during school life.

One important factor in the causation of this injurious eye strain is the bad type of many school-books, and it is very desirable that more attention should be devoted to this subject by those who have the supervision of the education of school children and college students. A small, bad type in school-books and college text-books not only causes eye strain and tends to produce myopia, but also, owing to the eye strain caused by reading such a type, there is often difficulty in concentrating the attention on the subject of study and diminished interest in it. For these and other reasons it is most important that the type of

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[1] Reprinted, by special permission, from *The Lancet*.

[2] I have stated the most important of these conclusions in a pamphlet on School Hygiene, published by Sherratt and Hughes, Manchester, 1904, p. 11.

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school-books and college text-books should be tested, as is done in some Continental towns, and when it is found to be defective an endeavour should be made to obtain books printed in a satisfactory type. Of course, it would be absurd to choose books for study simply on the merits of the type; but when the type of any desirable book is found to be defective, if the authorities of the school in which it is used strongly urged the publishers to print the work in a satisfactory type, there is little doubt that this would be done, especially if the school authorities clearly intimated that the use of the work would be discontinued if the type were not improved.

There are many points of importance with respect to the printing of books in order that those who read them may not suffer from eye strain. These are given in the various works on school hygiene.[1] Prof. Cohn has discussed the whole matter most thoroughly in his work on the subject.[2] In this short article I wish to refer only to the size of the printed letters and the distance of the lines apart. There is no absolute rule on these points, but the minimum size of type which Cohn would allow may be taken as a fair estimate for practical purposes, and I think that probably most of those who have studied the subject will allow that no type should be employed for school-books and text-books which is smaller than Cohn's minimum.

The following are Cohn's conclusions on the size of type, the letter "n" being used for measurement: the height of the smallest "n" should not be less than 1·5 mms.; the least distance between two lines of type 2·5 mms.; the thickness of the stroke of the letter not less than 0·3 mm.; the greatest length of the line 100 mms. (about four inches); and the greatest number of letters in one line sixty. Cohn has devised a simple test of the size of type—a test which indicates whether the type is smaller than the minimum just mentioned. A small square hole is cut in a piece of thin cardboard (or in a visiting card), the hole being exactly one square centimetre.[3] The card with the centimetre square hole is placed on the printed page of the book, the lower edge of the square being immediately above one line of print. A satisfactory type should be so large that only two lines of print can be seen in the centimetre square: if more than two are seen the type is too small, and should be condemned.

Size of hole in test card:

(Square centimetre.)

The distance of the lines apart is very important, since a small type with the lines well separated is more easily read than a larger type with the lines close together.

Taking Cohn's square-centimetre test as a trustworthy standard, I have examined the type of 250 school-books and college text-books with the following results. The type was equal to, or larger than, Cohn's minimum (*i.e.*, not more than two lines in the centimetre square) in 109 books. In thirty other books there were in some paragraphs two lines, in other paragraphs three lines, in the centimetre square. There remained 111 out of the 250 books (44 per cent.) in which the type was decidedly too small—*i.e.*, three lines or more in the centimetre square. The exact results were as follows:—

Books.		Number of lines seen in Cohn's centimetre square.
139	109	2 or 1.
	30	2 in some paragraphs, 3 in others.
111	93	3.
	3	2 in some paragraphs, 4 in others.
	9	3 in some paragraphs, 4 in others.
	5	4.
	1	5.

Defective type, as regards size and distance of lines apart, in 111 out of 250 books = 44 per cent.

The type of school-books has certainly improved very much in the last thirty years. In 78 per cent. of a series of old school-books, printed between 1870 and 1878, the type was defective—*i.e.*, three lines or more were seen in the centimetre square. In the 250 modern school-books which I examined the defective type was met with most frequently in books on mathematics (arithmetic, algebra, trigonometry, &c.). In 67 per cent. of the books on mathematics the type was defective. The small, cheap elementary works on science had also very frequently a defective type. Books on history, geography, travel, and books of general information were usually well printed, and so were the elementary reading-books for the junior classes. Many of the books of this class were beautiful specimens of the printer's art. But in cheap editions of poetical works and of standard English literature the type was often very small and defective. Particularly defective was the type of a large number of the very cheap editions of well-known novels (in school libraries) which are so eagerly read by the schoolboys and youths. Interesting books of this kind are specially liable to damage the eyes if printed in very small type. One of the worst printed books examined was a very cheap edition of "Robinson Crusoe" for schoolboys. I have tested the type of forty books in the library in the reading-room of a large hotel, the books being chiefly cheap editions of standard English authors. The type was particularly bad. In twenty-three out of the forty it was defective. The worst was an edition of Shakespeare, in which there were six lines of type in the square centimetre; and many poetical works had four lines of type to the centimetre square.

Often the type of the Bibles used by school children is exceedingly small; frequently there are six or seven lines to the square centimetre. Of course, Bibles are printed by the British and Foreign Bible Society in all sizes of type, and cheap Bibles can be obtained for schoolboys in satisfactory types, whilst other school-books are usually printed only in one type. There are good reasons, no doubt, for the printing of some Bibles in very small type, but the Bible Society would do well to issue "school Bibles" printed in a type not smaller than that of Cohn's minimum (two lines in the centimetre square). Atlases are often printed in a very small type, and the maps crowded with names. Often the height of the letters is only 0·5 of a millimetre, and often five or six names can be seen in the square centimetre, in addition to the indications of rivers, mountains, boundaries, &c. This, of course, causes great strain to the eyes of the pupils. It is most desirable that a larger type should be used in the atlases for school children, and that fewer names and details should be given. In most of the maps printed by the Royal Geographical Society (in the *Geographical Journal*) the type is much larger and clearer, though many of the less important names are printed in a type a little smaller than Cohn's minimum. These excellent maps might be well adopted as a standard of the minimum size of printing for school atlases.

There are many other points of importance in the printing of books which space does not permit to be considered

[1] Also in the pamphlet which I have already mentioned.

[2] Cohn and Rübencamp, "Wie sollen Bücher und Zeitungen gebruckt werden?" Braunschweig, 1903.

[3] Cards with a centimetre square for measuring the size of type can be obtained by post from Herr F. Tiessen, Inh. E. Schultz, Schmiedebrücke 30–32, Breslau, I., Germany.

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in this article. But the figures which I have given show clearly that, apart from other defects, the size of the type and the distance between the lines in a large number of school-books are too small if the minimum of the best authors be accepted. Apart from actual measurements, in many of the school-books examined it was evident from simple inspection of a printed page that the type was too small to be read for any length of time without great eye strain.

Since so much attention is now being directed to school hygiene, and since we have in Cohn's square-centimetre test such an easy method of detecting the two most important defects of type (size of letters and distance of lines), it is to be hoped that the printing of school-books will receive more consideration in the future. If those who have the supervision of the education of school children and students demanded that the type of school-books should be satisfactory, the risks of eye strain and myopia would be diminished, and the study of many books would be made easier.

RECENT RESEARCHES IN THE UPPER AIR.

THE methods for sounding the atmosphere employed at the present day have been in our possession but a few years. The kite, carrying self-registering apparatus, was introduced by the Americans about fifteen years ago; the sounding balloon dates but twelve years back. The use of balloons, furnished with registering apparatus, was proposed by Lemonnier, a French physicist, at the end of the eighteenth century; but they were actually employed for the first time by the Brothers Renard, and especially by MM. Hermite and Besançon, whose first observations go back to 1893. Observations of great interest had already been made on mountains. To these are now added observations made in air altogether free.

M. Teisserenc de Bort has carefully verified that the pressure in free air diminishes in accordance with the barometric formula. For that purpose he determined the heights of a large number of balloons by observing them with two theodolites. On the average the heights thus observed agree with those deduced from the barometers carried by the balloons to within 2 or 3 millimetres of barometric pressure for a height of 4,000 metres. The maps of the isobars at 4,000 metres show that most of the areas of high and of low pressure observed near the ground become effaced as we rise in the air, and give place to a pressure distribution of a much simpler kind, viz. a maximum of pressure all round the earth in the tropical regions, and low pressures at the poles. The average direction of cirrus clouds is in harmony with these conditions.

As regards the distribution of temperature, the following conclusions have been established:—

(1) Even at a height of several thousand metres above the ground there is, contrary to what had been thought, a very sensible variation of temperature from winter to summer, the divergence of temperature between the coldest and the hottest month being 9° C. at 10 kilometres height.

(2) After it had been noticed that the rate of fall of temperature increases with the height above the ground, it was naturally supposed that temperatures at great heights in the air were extremely low. But sounding balloons dispatched from the Trappes Observatory have proved that, after a certain height, varying from 9 to 14 kilometres, the fall of temperature ceases altogether—another fact that was wholly unexpected.

(3) The zone where the temperature ceases to fall, called the "isothermal zone," is situated nearer the ground (8 to 9 kilometres in certain places) with low pressures, and further from the ground (about 12 or 13 kilometres) above high-pressure areas.

(4) As a general rule, it is colder in the upper part of an anticyclone than it is at a corresponding height above low pressures, but the contrary holds at medium heights of about 5 kilometres. The absolutely lowest temperatures are observed near high pressures. A temperature of −73° has been observed several times at Trappes, and recently as low as −80° in Austria.

(5) Balloon flights made daily for a week or more at a time, in different years and at different seasons, have shown that at intervals of a few days the atmosphere experienced variations of temperature which are much more important high up than on the ground. At a height of 11 kilometres variations of 15° to 20° are often observed at a time when variations of only 2° to 3° are found near the ground.

It is believed that the arrest of the decrease of temperature is connected with the cessation at a certain height of movements of the air having a vertical component, the air then having movements which follow the isobaric surfaces. There is no longer any temperature variation due to expansion or compression of the air.

It has been demonstrated, alike by calculation of the isobars and by the flight of balloons, that most of the depressions which appear near the ground as complete atmospheric vortices suffer deformation as the height increases, and in their northern part lose themselves in the great polar vortex; so that, at a certain height (4 to 7 kilometres), east and north-east winds are no longer found to the north of a depression, and the isobars at this height form a handle attached to the low-pressure areas of northern latitudes. On the front of a depression its characters remain distinct to the top; a sheaf of ascending air reaches the height of cirrus cloud, and then spreads over the barometric maxima to east and south-east.

[1] Summary of an address delivered before the Royal Society of Edinburgh by M. L. Teisserenc de Bort.

HISTORY AND CURRENT EVENTS.

IN 1685, Louis XIV. of France revoked the Edict of Nantes. The policy which culminated in that revocation drove out of France thousands of Huguenots, who took refuge partly in England, partly in Prussia and other Protestant lands; and it has become a commonplace of history to remark on the consequent weakening of France and enrichment of those countries that received the fugitives. More than two hundred years have passed, and now the circle seems to have been completed. Even the *ancien régime* had its quarrel with the Society of Jesus, which, at the bidding of Bourbon monarchs, was suppressed in 1773, being restored only with so many other institutions in 1814. Now France will have no "religious orders" within its territory, and has even completed its revolution by breaking the Concordat and disestablishing the Catholic Church; and the events of the seventeenth century are repeated. The French fugitives have taken refuge again in England and in Prussia. Whether the parallel will be carried further is for the future to show.

THE British Empire, like all largely extended dominions, is a federation. In other words, central government of such extensive territories being, for obvious reasons of distance and conflicting interests, practically impossible,

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much is left to local government; and these local governments form a kind of hierarchy. There is local government, and still more local government. There is, *e.g.*, a British Empire, which contains an Australian Commonwealth, which in turn contains States, New South Wales, &c.; and there is also a Dominion of Canada, which in turn contains Provinces, Quebec, &c. This division of the powers of government, though not deliberately set up, has been allowed to exist for the express purpose of giving free play to the conflict of interests. British wisdom has found that it is better to let disaffection talk, even in talking machines (Parliaments), than to attempt to stifle it until it expresses itself violently in rebellion. Hence what appears as revolution in other countries, such as Russia or Austria-Hungary, or even has appeared in our own ancient history, as in North America in the eighteenth century, now scarcely excites remark.

The provinces of Canada are discontented with the Constitution of the Dominion, and the more western thereof are expressing their dissatisfaction with certain financial arrangements by demanding a change in the Constitution. The Australian Commonwealth is dissatisfied that the British Empire has made a convention with France about the New Hebrides without consulting it. It has lately passed a Bill giving preference to British goods, but only if they are imported in British ships manned exclusively by white men, to the exclusion, that is, of their fellow-subjects who are Lascars, &c.; and the Governor-General is not certain that the British Empire will agree to this condition. Western Australia is dissatisfied with the results of her union with the other colonies in the Australian Commonwealth, and is proceeding to express her desire to withdraw therefrom. Yet we do not think the British Empire is threatened with partition; much less do we anticipate a war between Western and Eastern Australia, such as rent the United States forty years ago. Why?

The agitation of Bengali Hindus against the partition of Bengal, and their apparent partial success, has at last roused the Mohammedans of North India to speak their mind to the Viceroy. These latter are a long-suffering community who, though not neglectful entirely of education, have left the Bengalis to obtain the advantages offered by the University of Calcutta and similar institutions. The consequence has been that the Bengalis have developed their native gift of talking, often without the balance of mind derived from long practice in administration and in the higher ranks of government, and have been heard out of proportion to their importance. But now the more silent ones have spoken; and they have been assured by the Viceroy that in any development of consultative councils they shall be represented as a community. "As a community"—that is, the British will make the beginnings of what may prove, in the dim and distant future, to be a Parliament for India where their mediæval kings began, with an assembly of estates.

A Year's Work with Mother Nature. By Alyce L. Sandford. 203 pp. (Pitman.) 3*s.* 6*d.*—With this "easy series of co-related nature-studies for little children, based on the seasons," a teacher should find no difficulty in interesting the most "difficult" infants. In the lesson on "The Life of the Bean," for example, we find a page of sketches, teaching notes, and a song (words and music by the author); and, finally, the bean is pressed into service for no fewer than fifteen infantile activities, from designing to arithmetic.

ITEMS OF INTEREST.

GENERAL.

The new buildings of the King Edward VII. Grammar School, presented by Sir W. J. Lancaster, a former pupil of the school, were opened on November 5th by the King. His Majesty used the occasion to express his belief in the value of education. "It is only by a thorough education that the younger generation can hope to prove successful in later life," he said in his reply to an address presented by the Mayor. Replying to an address from the governors of the school, the King remarked: "You, as governors of the school, will, I feel sure, exercise the most solicitous care in the direction of the studies of your pupils, that they may be able to face the stress of life with an intellectual equipment such as will enable them to hold their own in the world and bear their part in its work and duties with efficiency and to the benefit of others; nor will, I feel confident, the higher teaching of morality, truth, and self-respect be neglected."

Mr. Birrell distributed at Leeds on November 3rd scholarship certificates granted by the West Riding County Council to the successful students. During the course of an address, he said it is necessary to bear in mind the difference between one kind of education and another, but it would tax more powerful intellects than his to determine where elementary education ends and secondary education begins. The education of this country is one process, and we cannot divide it. Education begins the moment we are born and ends only with the grave. It does not, therefore, do to exaggerate the scholastic side of it; still less to strike any real deep-rooted distinction between one kind of education and another. Any indication of jealousy and rivalry between co-partners in a great and glorious undertaking is to be regretted. Still less, again, will it do to accept the vulgar notion that elementary education is something for the children of artisans and agricultural labourers, secondary education for the children of the professional and middle classes, and university education the luxury of the rich. Class distinction of any sort must not enter within the sacred realm of education. The difference between elementary and secondary education is not the difference between one class and another, but simply the distinction between the different times that can be allotted to education and the different aptitudes of pupils. It is a tendency, he continued, of all teachers and of Presidents of the Board of Education to exaggerate too much the necessity of prolonged study at school and college; but the educational system of the country is lamentably and dangerously defective if it does not provide for those who can devote more time to their education and for those in the elementary schools who show aptitude for an increased amount of learning.

The tenth annual conference of the Parents' National Educational Union was held at Brighton on November 2nd and 3rd. Representatives of branches attended from various parts of the country. During the course of the meeting several important papers were read, among them being "Some Thoughts on the Early Teaching of Children," by Miss Clementina Black, who said that the real aim, intellectually, in teaching children is to make them keen and their interests wide and alert to the interests of the world. Miss E. A. Parish contributed a paper on "The Teaching of History to Young Children." A paper on "The Place of Classics in Modern Education" was read by Dr. W. H. D. Rouse, who holds

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that by abolishing Latin and Greek the mental effects of the study of those languages and the stimulus of their literature will be lost. But if the classics are to be retained, the time-table will require to be remodelled. Oral methods should also be employed. Mr. Philpotts, late headmaster of Bedford Grammar School, in opening the discussion, said that in the classics it is the literature the teacher wants to get at, and he suggested that all grammar papers that form a barrier to progress in this direction should be abolished. M. Roger Goeji-Hampson read a paper on "The Difference of Methods of Teaching in Belgium and England," the Rev. W. C. Compton, headmaster of Dover College, on "Knowledge and Character," and Mrs. Creighton on "Time and how to use it."

A FEDERAL conference on education is being arranged in connection with the League of the Empire, and will be held from May 24th to June 1st, 1907. Among the subjects proposed for discussion may be noticed: the provisions for the supply and the training of elementary-school teachers, and the conditions of their work in the United Kingdom and other countries of the Empire; the same inquiries in connection with secondary-school teachers; the practicability of temporary interchange of teachers and inspectors between the home country and other parts of the Empire; the relations between secondary and primary schools in the various countries of the Empire; the means of establishing a system of mutual recognition of equivalent educational standards of attainment in different countries of the Empire; and the methods of teaching the subjects of the school curriculum. The proposed programme is ambitious in its scope, and should be productive of good results. Full particulars concerning the conference may be obtained from the honorary secretary to the League, Mrs. Ord Marshall, Caxton Hall, Westminster, S.W.

THE annual general meeting of the Association of Teachers in Technical Institutes was held at the end of October. The report of the council for 1905–6, directing attention to the growth of the association, the formation of provincial branches, and the hastening of alterations in schemes of instruction and examinations, was approved. The following resolutions were accepted by the meeting on the recommendation of the council: "That in view of the generally inadequate provision made in the present scholarship schemes of local educational authorities for the needs of scientific, technological, and trade students, the local branches of the association be instructed to consider what amendments of local scholarship schemes are necessary to meet the needs of such students, and to press such amendments upon the local education authority with a view of remedying the defects indicated"; "That the attention of the technological branch of the Board of Education be drawn to the desirability of recruiting the staff of inspectors only from those with experience in technological teaching." Mr. V. A. Mundella, head of the physical and electrical engineering department, Northern Polytechnic, Holloway, was elected president for 1906–7.

THE council of the Teachers' Guild has sent a memorial to the President of the Board of Education, which states that the council is encouraged to hope that he will be ready to accord consideration to its views on the subject of the register of teachers. That no definite pronouncement on the subject from Mr. Birrell can be looked for until the clause of the Education Bill abolishing the present register has become law is recognised. The council is anxious that, should the present register be abolished, a new one should be speedily established, which, to use Mr. Birrell's own words, "must be satisfactory to the teaching profession as a whole," and must, therefore, not classify teachers according to the grade of the school in which they have been teaching. The register should also have as its leading characteristics the fullest guarantees of professional preparation and the requirement of an academic standard as high as possible. Such a register, the memorial holds, would be best kept by a statutory educational council, on the lines laid down by the Royal Commission on Secondary Education. The establishment of an educational council seems to the council to be likely to afford the best means for the creation of a real profession of teaching.

THE annual meeting of mathematical masters in Swiss secondary schools was held this year at Bâle under the presidency of M. Fehr, of Geneva. The first subject of discussion was the division of the angle into decimal parts and the use of four-figure logarithms. On the motion of Dr. Otti, of Aarau, the following motion was adopted:—"In no branch of school mathematics are logarithm tables with more than five figures necessary, and in many cases four figures are sufficient." The centesimal division of the quadrant was recommended as the most advantageous; but in the face of practical difficulties it was considered advisable to use degrees and decimals of a degree. M. Kollross, of La Chaux de Fonds, discussed the subject of approximations. On his motion the following resolutions were adopted: "Every definition and every piece of theory should be preceded by concrete illustrations, so that the pupil may gain a general idea of the subject before he is introduced to a precise definition and a logical demonstration." "It is useful to consider the limits between which the result of a calculation lies when the data lie between known limits. For this purpose a comparison of results found by direct measurement with those given by calculation will often prove of great value."

WE have received from M. J. Toni-Mathieu, the director of the International Exchange of Children and Young People for the Study of Foreign Languages, a copy of the directory of the association for 1906. The movement was started in Paris in 1904, and has already met with much success. The idea has been more favourably received in Germany than in England; but the director receives from time to time from English headmasters and others assurances of the real value of the work of the association founded by him. Full particulars may be obtained from M. J. Toni-Mathieu, 36, Boulevard de Magenta, Paris.

WE are asked to state that a limited number of bound volumes of *Skandinavisk Månadsrevy för Undervisning i de tre Hufvudspråken* have been prepared, particulars concerning the contents and price of which can be obtained on application to the English Editor (universitetslektor Mr. C. S. Fearenside, Lund, Sweden), and that inquiries relating to the successor of that periodical should be addressed to the editor of *Moderna Språk*, Kristinelundsgatan 4, Göteborg. Owing to differences of opinion on the editorial board, our trilingual contemporary for the study of modern languages has been discontinued after about a year's existence, and its place has been taken by a new review which definitely restricts itself to the needs of the school teacher of modern languages. The new review, which is edited by Dr. Emil Rodhe, with the assistance of various foreign lectors in Sweden, resembles its predecessor in being trilingual (English, French, and German), but has at least one great advantage over it, and that is its possession of a short and self-explanatory

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title, *Moderna Språk*. The first number, which has just appeared, contains, besides translations from Swedish into English, French, and German, an interesting article on "Dickensian Archaisms," by Mr. F. Cane, and the first of a series of interpretative papers, by M. Camille Polack, on some of the extracts included in his "Pages Choisies des Grands Écrivains du XIX^e Siècle."

COMMANDER R. E. PEARY, though he did not succeed in reaching the North Pole, has beaten his own previous record—84° 17′ N. in 1902—and gained the most northerly point yet reached—lat. 87° 6′ N. After passing out of Ungava Bay in August, 1905, the *Roosevelt*, Peary's vessel, proceeded to the extreme north Greenland settlement. The vessel steamed and drifted through the ice to a latitude of 82·27°, where the expedition established its winter quarters. On February 7th Commander Peary started with some Eskimos and three teams of dogs for the Pole. Five other parties similarly equipped put out as reliefs, keeping fifty miles apart. Commander Peary was absent 117 days, and reached 87° 6′ N., 201 miles from the Pole, before he was compelled to start on his return. The food supply almost gave out. On the return journey the party encountered a most severe snowstorm, while the temperature fell to 75° below zero. It will be remembered that the Duke of Abruzzi's expedition reached lat. 86° 33′ 49″ in long. 64° 30′ E., in 1900.

MR. C. E. HUDSON, of Dover College, has been appointed headmaster of Keswick Dual School, in succession to the Rev. Cecil Grant. The success of Keswick School in developing a co-educational system was described in THE SCHOOL WORLD for November, 1901.

THE Civil Service Commissioners announce examination for 100 clerkships as abstractors on January 29th, 1907, and for 210 temporary boy clerkships on January 2nd, 1907. Particulars of these appointments and the subjects of examination will be found on pp. 227 (June) and 308 (August) of our present volume. The last days for application are January 10th and December 6th respectively. The age allowances now apply to examinations for abstractorships. In future, an ex-boy clerk can compete for an abstractorship, not merely until he is twenty-one, but until he is twenty-one + his years of service. Thus, if he obtains a situation after reaching the age limit of twenty, he might try to re-enter the service until he was twenty-five, instead of having to abandon the attempt at twenty-one.

THE C.S. Commissioners also announce that an examination for thirty Assistants of Customs will be held in February, 1907. The subjects and salaries will be found on p. 32 (January) of our present volume. The age limits are eighteen and twenty-one. Forms for applications can be obtained, with particulars, from the Secretary, Civil Service Commission, Burlington Gardens, W.

THE price of "The Simpler Poems of William Wordsworth," selected by Mr. Edward Hutton, and published by Messrs. J. M. Dent and Co., is *threepence net*, and not 3*s*. net, as stated on p. 436 of our last issue.

SCOTTISH.

PROF. PHILLIMORE, who has vacated the chair of Greek for the chair of humanity in Glasgow University, delivered an address to the students on taking up his new duties. He paid a beautiful tribute to his predecessor, Prof. G. G. Ramsay, whose long reign of forty-three years saw immense changes and developments in the University. In all these Prof. Ramsay was either a formative or a regulative influence, and to him more than to any other one man is due the tradition of good order and businesslike organisation that distinguishes the Arts Faculty. The strong good sense, the impatience of anything like shoddy pretension and sentimental affectation, the practical energy and well-matched talents which characterised him, sat fittingly and gracefully on one whose duty it was, not only to impart acquaintance with Latin literature, but to expound the temper and quality of the Roman people.

PROF. PHILLIMORE, in the course of his address, took occasion to justify the study of Latin and Greek mainly on the ground that history, an adequate conception of history, is needed as a corrective to the blind self-conceit that is fast taking possession of the mind of Western Europe. He claimed that we cannot know anything of the history of Europe for an epoch of some 3,000 years without a knowledge of Greek and Latin. The professor was not content with merely defending his own position. He carried the war into the camp of his utilitarian enemies, and some of his shrewdest sallies were directed against the seeming "commercialism" of Dr. Carnegie's views on university education. "To know of Herodes, Atticus, and Trimalchio would give no bonds in the Steel Trust, and yet Trimalchio and the illiterate millionaire who bought books he could not read had to thank their satirists for what immortality they could boast of." "Anybody might be less dazzled and hypnotised by the Golden Calf if he had studied the beast in history, and satisfied himself that the features of this, like other idols, did not alter much in a couple of millenniums." To those who reproached the universities for studying "dead languages" he had an effective retort. "Every language was dead to those who could not read it. Latin was dead to Dr. Carnegie, because Dr. Carnegie was dead to Latin." "Unless they were learning a language commercially—a perfectly lawful object, but not one which a university proposed to itself—what matter whether it be dead or alive, a spoken language or not. The time would never come when they could afford to neglect the study of the rock bottom of classics upon which half our language, our literature, and institutions were founded." These are only a few tit-bits from a singularly outspoken and unconventional address. They prove Prof. Phillimore to be a "bonnie fechter" and a champion worthy to contend with Prof. Armstrong himself in vigour and directness of attack.

THE Outlook Tower, Edinburgh, under the direction of Prof. Geddes, continues to extend its sphere of operations. During the past session a thorough overhaul has been made of the exhibitions and apparatus. Descriptive labels attached to the various objects of interest should prove of great value to visitors who have not time to peruse the official guide. Prof. Geddes himself devoted the whole of August and September of this year to the work of rearranging the various collections. The enthusiasm, knowledge, and devotion which he brings to all the movements connected with the Outlook Tower promise to make it an unrivalled centre of light and leading in the Scottish metropolis. The course of lectures for session 1906–7 is, as usual, quite unique in its range of subjects. Dr. Stanley Hall, president, Clark University, U.S.A., opened the series by an address on "The Outlook in Education." No report could do anything like justice to the knowledge, insight, and sympathy he displayed in regard to all the problems of school life, and still less to the charming play of humour which ran in a rich vein throughout the whole address. Psychologists, and especially American psychologists, too often give ground for the charge that their

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theories have little regard to the facts and conditions of ordinary school life. Dr. Stanley Hall is as eminently sane and practical as the most critical could wish. Even in regard to corporal punishment he showed that he knew all the problems of child training. "The great thing to remember," he said, "is that discipline, even in a severe sense, is, on occasion, necessary. They must insist on prompt obedience and strict discipline in school. Punishment, aye, even corporal punishment, should follow quick on an offence, and should not necessarily be without anger." This will seem rank educational heresy to the sentimentalists who believe in the natural goodness of all child nature; but teachers, and all who are in close contact with children, will heartily welcome Dr. Hall's contribution to the common-sense and common-fact point of view.

THE report of the Committee of Council on Education in Scotland for the year 1905 has now been completed and issued in a bulky volume of more than 1,000 pages. Reference has already been made in these columns to the separate parts of the report as they appeared from time to time, but there is still left a mine of interesting matter which should prove of permanent value to the general reader, as well as to the educational expert. Mr. Scougal's second annual report, as senior chief inspector, provides an admirable conspectus of the direction and aims of all types of education in his widely-scattered district. Steady though slow improvement continues to be noticeable all over the country, the average percentage for the country having risen from 85·98 in 1904 to 86·6 in 1905. The period immediately before and immediately after the summer vacation is responsible for a serious decrease in the percentage of attendance. Parental carelessness and selfishness, as well as the migratory habits of certain classes of the population, are responsible for the greater part of this decrease; but it is pointed out that greater activity on the part of the attendance authorities at this time would materially lessen the number of absentees.

IN regard to the ordinary school work, it is stated that there is evidence of distinct improvement in the teaching of English and arithmetic, a better correlation of allied subjects of instruction, and a truer conception of the place and function of the various subjects in the scheme of education. Mr. Jamieson, inspector of the eastern division, has some pertinent remarks on the nature of the training in city schools. "In the city school there may be greater regularity of writing and greater deftness in some of the other mechanical parts of the work, but there is certainly not greater intelligence, and there is certainly less individuality. The opinion has steadily grown to conviction, that in large schools where there is a teacher for every class, the children are over-taught. Everything is shown to them and done for them, and they are not left alone for a single moment while the time-table runs." Mr. Jamieson has touched the weak spot in large schools, but he can hardly be said to suggest the remedy. Perhaps in another year he may have more to say upon what is admittedly a most difficult problem.

PUBLIC attention was recently directed to the results of town conditions upon the mental and physical capacity of Scottish children through the report of the Royal Commission on Physical Training. The conclusions then arrived at were not accepted as final, as they rested to some extent on incomplete and insufficient data. The committee of the Edinburgh Charity Organisation Society resolved some time ago to make a more thorough and detailed investigation into the relations between "slum" conditions and physical and mental deterioration. For this purpose they selected for examination a public elementary school in the poorest district of the city, attended by nearly 1,400 children. Every child in the school was weighed, measured, and thoroughly examined by medical experts. The home conditions of each child were investigated by a band of volunteer visitors; the parents' employers of labour were in every case seen or written to, and every church and religious or charitable association that could throw light on the social conditions of the people was appealed to. The investigation was therefore as searching and specific as could well be imagined, and the report, which has just been issued, is justly entitled to be regarded as trustworthy and conclusive so far as its facts go. Mr. Arthur Sherwell, under whose direction the whole investigation has been made, states in his preface to the report that "while the economic factor is not absent from the poverty problem in the city, moral causes are present in exceptional measure, and much of the suffering and degradation of the people is plainly and unmistakably due to an excessive indulgence in drink." The report proves in an absolutely irrefutable manner the close connection between physical deterioration and bad feeding and housing. "At five years of age the average boy in this Edinburgh school is 2·16 lbs., and the average girl 2·8 lbs., less than the standard average of the Anthropometric Committee. At thirteen years of age the boy weighs 10·9 lbs., and the girl 12·4 lbs., less than the standard average." Height follows much the same rule as weight, and in almost every case it is noted that it is the girl that suffers most from malnutrition. The results here placed before us are humiliating and discreditable to us, a nation that claims to be in the van of civilisation.

PROF. LODGE, in his opening lecture to the history class in Edinburgh University, commented on the modifications in the system of teaching in the Faculty of Arts proposed by the University authorities. Hitherto the teaching of the Scottish universities had been what was called professorial teaching, while that of the older English universities was tutorial teaching. He had had a good deal of experience of both systems, and each had certain merits and real defects. The traditional corporate spirit of the Scottish class made the professorial method more efficient and exhilarating in a Scottish university than in Oxford or Cambridge. Its chief defect was that under it the teacher had to deal with a class, and not with the individuals of it. The individual could best be attended to under the tutorial system; but this, too, if carried to extremes, was too extensive, too laborious, and took away too much the initiative of the student. The great advantage of the professorial method was that it encouraged the independence of the student. If to its manifest advantages they could graft the best elements in the tutorial system, the efficiency of the Scottish universities would be enormously increased.

GLASGOW has followed St. Andrews in celebrating the quatercentenary of the birth of George Buchanan, the distinguished humanist and reformer. In St. Andrews the proposal originated, and it was in large measure carried through by the University authorities. In Glasgow the celebrations, while loyally supported by the University, were the outcome of the enthusiasm of private citizens and of learned societies like the Archæological and Historical Society. The address of Principal Lindsay on the life and work of Buchanan was the outstanding feature in the celebrations, and by general consent it was acknowledged as one of the noblest and most worthy that the present

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centenary has called forth. Following the precedent of St. Andrews celebrations, an exhibition of portraits, books, and other memorials of Buchanan was held in the library of the University. A catalogue of the exhibits has been prepared, and will constitute a permanent record of the exhibition. The fullness of the bibliographical index and the completeness of the notes in regard to each exhibit reflect the highest credit on the industry and the encyclopædic knowledge of Dr. Murray, who was chiefly responsible for its production. It is also proposed to publish a memorial volume in honour of George Buchanan, the contents of which will include, in addition to Principal Lindsay's address, other first-hand contributions to the biography of Buchanan or to the literary and political history of his time.

DR. STRUTHERS's report on secondary education in Scotland will well repay study. It contains several new and interesting features, and is not merely a repetition, *ipsissima verba*, of previous reports, as has frequently happened in past years. The most significant part of the report is that which deals with the organisation of higher education in Scotland. While the number of recognised secondary schools has remained stationary, the number of higher-grade schools has risen to 141. This striking increase in the number of higher-grade schools is indicative of the important functions these schools must now fulfil in the national system of education. As there are whole counties in Scotland where no higher-class schools exist, the higher-grade schools must supply all the secondary education that is given. If they are to give equal opportunities to every type of capacity, the sooner they are freed from the intolerable restrictions that hinder their usefulness the better. The uniform curriculum in particular must go if there is to be any initiative and any progress in higher-grade schools in Scotland.

THE Governors of the Heriot-Wall College, Edinburgh, have approved of a proposal to appoint for each subject of technical instruction in the college advisory committees representative of the particular trade or profession interested. These advisory committees will be given every facility for fully acquainting themselves with the details of the curriculum and methods of teaching the various subjects. Any advice they may have to give in order to meet more fully the necessities of workshop practice will be carefully considered. The action of the Heriot-Wall governors may well be commended to all governors and directors of technical schools and colleges throughout the country. Such advisory committees should prove of the utmost service in keeping the work of technical schools in living touch with the requirements of industry and trade.

IRISH.

THE Commission on Trinity College is expected to issue its report before the end of the year. Commencing on October 16th, it held several sittings in Dublin for the oral examination of witnesses, but previously issued an interim report containing the written evidence sent in, which witnesses were expected to read before appearing at the Commission. Contrary to the usual practice, the meetings were held in private. The oral work was finished off very rapidly, and before the end of the month its sittings had been transferred to London. A writer in the *Athenæum* has described the Blue-book containing the interim report as melancholy reading, and so, no doubt, it is, as it reveals once more the impossibility of Roman Catholics and Protestants coming to any agreement on the university question.

FOUR possible solutions appear: (1) a reform acceptable alike to Protestants and Roman Catholics is vetoed by the Roman Catholic hierarchy. (2) A Catholic college in Dublin University equal in all to Trinity College. This is vetoed by Trinity, thinks that this will imply Roman Catholic control University, and consequent friction with Trinity new university which will be acceptable to Catholics. This is probably too expensive a besides being likely to meet with opposition in while it will create another crux by leaving the University and the Queen's Colleges in a difficult (4) A reconstitution of the Royal University, by Catholic University College in Dublin will be an adequate scale. This is the scheme recommended the last Commission; as it leaves Trinity untou will be regarded as satisfactory by a large Roman Catholics, it seems the most feasible present. A somewhat cryptic resolution passed Senate of the Royal at its last meeting seems tended to support this proposal. The present Co will doubtless result in large internal reforms College itself in the constitution of the Board election to fellowships.

THE regulations for the Junior Exhibitions in College, which are open to all matriculating studen nineteen, and the number of which has this ye raised from twelve to sixteen, will next year be a further change. This year natural science was in as a subject for the first time, with a total of 100 Next year the papers in English literature and in and geography are to be alternative, and the ma them to be reduced from seventy each to sixty, the marks thus saved being added to the marks for languages (French or German), which will thus co This will give a better opportunity to students no Greek, two of whom this year obtained exhibitio under the present rules.

PROF. CULVERWELL is delivering this term a c six lectures in Trinity College, open free to the on Friday afternoons, on "Bodily Developme related to Mental Efficiency and the Formati Character." The titles of the lectures are: (1) " tion as Progressive Adjustment"; (2) "The Ev Evidence of the Connection between Thought and Mo Movements"; (3) "Physiological Evidence of the Co tion between Muscular Action and Thought"; (4) Hand, and the Education of the Brain"; (5) "Morali Dependent on 'Inhibition'"; and (6) "Physical Dev ment and Training."

THE question of the registration of teachers has been taken up somewhat vigorously in Ireland this au in the hope that the Education Bill may yet be so am as to retain the Register. The case for registrati Ireland is not on the same footing as in England. Register is under the control of the English Board Education, which has no *locus standi* in Ireland, alth it has allowed Irish teachers to register their na Nevertheless, registration has produced a good effect Ireland, for much attention has been directed to the p tion of Irish teachers, and considerable development taken place in the facilities for training. Lectures teaching like those of Prof. Culverwell have become reg in Trinity, and similar lectures are given by the Father Finlay, S.J., in the University College. Mes Dale and Stephens further reported last year that it

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le to establish a scheme of registration here. The erefore seems ripe for further developments in this n in Ireland; but it may be regarded as certain that tration disappears in England, very little will be of it in Ireland, and Irish teachers will see in the ture little means of improving their profession. ions and memorials on this matter have been sent Birrell by the Teachers' Guild, the Women's tes' Association, and the Irish Schoolmistresses' tion.

Hermione lectures in Alexandra College were this lelivered by Prof. H. von Herkomer early in ber. The four lectures were entitled "The Painter," and Lovable and Paintable," "Bavaria Romantic intable," and "A Triologue."

WELSH.

report on the intermediate schools of Wales for the ar has just been issued by the Central Welsh Inter- e Education Board. The total number of pupils in ermediate schools this year has been 11,577. Last e number was 10,413. The increase, therefore, was or 11 per cent. on last year's numbers. In the first f the Central Board, viz., 1897, the number was "In consequence of the increase in the last triennial the schools have now to contend with difficulties of ation incidental to a sudden influx of new pupils. are indications that the increase in the permanent as not kept pace with the increase in the number of The question of increased accommodation has be- very urgent in a considerable number of schools. erage length of stay is gradually improving; but if s to be a substantial improvement the proportion of admitted under twelve years of age must improve."

question of Welsh in Welsh schools is attracting ing attention. Cardiff has decided, by the casting f the Mayor, that at the pupil-teachers' centre at , Welsh shall be learned by the pupil-teachers. It idered by some that the logical consequence of re- g pupil-teachers to learn Welsh is that teachers in g in the Welsh training colleges should also be d to learn it. No one inquires what subject shall en up so as to make room for it, and yet all the ities on elementary training colleges in England and have been complaining of the large number of sub- rowded into the curriculum, and the danger of over- for students in training. It would simplify matters if someone would definitely propose, say, that should be taken up by Welsh students instead of ne modern language ordinarily taken in college. one would agree that if Welsh students in training s are to be required to take Welsh as part of their , it should be taken up thoroughly, and not as a lsory "extra."

Central Welsh Intermediate Education Board re- at its last meeting, a report from the chief tor on the teaching of Welsh in the intermediate as follows:—During the year 2,730 pupils [out of received instruction in the Welsh language, an e since 1904 of 902 in the number of pupils. The r of schools in which Welsh was taught was fifty-six inst forty-five in 1904. During the same period there en an increase of 51 per cent. in the number of presented for examination in Welsh. The chief or suggested that one effective way of improving the n of the Welsh language in the curriculum would be to use it as a medium of instruction in Scripture. In the discussion which followed, it was stated that though it was open to the pupils to answer Scripture in the examinations in Welsh, only one pupil did so. It was proposed that the Board send a suggestion to the local governors recommending them to train the children in Scripture in Welsh; but the matter was adjourned on the suggestion of the chairman until next May, when the schedules are considered.

THE Pembrokeshire Education Committee has decided to recommend the county authority to join the Warwickshire County Council in a protest to the Board of Education against the excessive number of forms and returns demanded from them.

AT a meeting at Swansea, Sir John Llewelyn stated that the county of Glamorgan provided for the education of 64,974 children. The average attendance in the whole county was 88 per cent., and for the Swansea district 91 per cent. The outstanding loan for the county was £400,000. The county authority had passed a religious syllabus based upon experience gained in other parts of the country.

THE Calvinistic Methodist Theological College has been located at Aberystwyth, in a handsome and adequate building provided by the generosity of Mr. David Davies, M.P., of Llandinam. Mr. Davies made a noteworthy speech at the luncheon on the opening day. He expressed the hope that soon there would be established at Aberystwyth one theological college for the training of students of all denominations. "The present college was a foundation-stone in that structure, and when the structure was complete it would be a place in which professors and students of all denominations would find that their common brotherhood and aims were much greater than their petty differences."

THERE is a serious school difficulty at Llanelltyd, near Dolgelley. The Church school, the only school at Llanelltyd, was condemned some time ago as insanitary. The Nonconformist children, since the Welsh Revolt, have been daily taken to a council school at Dolgelley. The Llanelltyd school has been removed from the list of elementary schools. There is, therefore, no school there, and the owner of the Llanelltyd property refuses to sell land for the purpose of erection of a school by the Merioneth Education Committee. The trustee of the estate says he regrets the proposal of the committee. "The present school could easily have been enlarged and improved, and the owner of the estate was willing to undertake this, and save the ratepayers' pockets."

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Xavier de Maistre, Voyage autour de ma Chambre. Edited by Dr. J. E. Michell. viii.+128 pp. (Blackie.) 1*s.* 6*d.*—This edition may, on the whole, be recommended. The text is nicely printed, and the vocabulary is practically complete; it is odd to read that "French words closely resembling their English equivalents are omitted," and to find, on the same page, "*adopter*, to adopt; *adorer*, to adore." The notes are interesting, at times not without a touch of eccentricity; but, after all, that is preferable to the tediously commonplace. There are not many misprints; *Darkbarkeit* in the note on p. 22, l. 9, and *riens* (for *viens*) in the quotation from Jocelyn

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on the same page, *frissonants* on p. 77, *vouz* and *sa* for *la* on p. 80, are examples of printers' slips. It should be added that some questions on the text, and sentences and passages for retranslation, are also given.

Alfred de Musset, Poésies Choisies. Edited by C. E. Delbos. xxiii.+135 pp. (Oxford: Clarendon Press.) 2*s.* net.—This is a volume in the Oxford Higher French Series, edited by Mr. L. Delbos. To have a selection of Musset's verse will please many, especially as the editor has supplied a good introduction and brief, helpful notes. Only the remarks on prosody are not always satisfactory; thus there is nothing more noticeable in the rime *nuits: amis* (p. 110) than in our rime *true: new*, and the note on ll. 161–4 of *La Nuit de Mai* is quite pointless; in ll. 180–3, 184–7, and in many other cases, there are "four consecutive lines that do not rime." The notes are generally well expressed; as a curious example of how not to word a note, the following deserves to be quoted: "*affreux Lido*: probably so spoken of as having been the place where that sad event occurred which separated him from George Sand: but again might accurately describe its appearance except during the summer season, when it might present a lonely and gloomy aspect, although one of the principal islands, Malamocco, was formerly—but is not now—a charming spot."

(1) *A. Galland, Sindbad le Marin*; (2) *E. About, Les Jumeaux de l'Hôtel Corneille*; (3) *P. Mérimée, Le Coup de Pistolet et Tamango.* All edited by W. G. Hartog. 70 pp. each. (Rivingtons.) 1*s.* each.—These are well-known texts, and have, we believe, all been edited for English pupils before. The characteristics of these volumes are similar to those of others in Rivingtons' series of New Intermediate French Texts: text, notes in French, *questionnaire*, a few grammatical exercises, and passages for re-translation. There are also the usual signs of hurried production: in (1) we have counted fifty-eight misprints on fifty pages. The illustrations to (1) and (2) are above the average; those to (3) are simply awful. We cannot conceive why anyone should edit such a horrible tale as *Tamango.*

Dent's First Exercises in French Grammar. By Miss F. M. S. Batchelor. 83 pp. (Dent.) 1*s.* net.—A companion volume to Berthon's "Première Grammaire Française" which consists of questions on the more usual parts of French grammar. To avoid translation, sentences are given in French with blanks to be filled up. The system does not seem to differ considerably from other elementary works of the same nature.

Les Pèlerins de la Tamise. By Christine Boyd. 120 pp. (Dent.) 1*s.* 6*d.* net.—A reading-book for second- and third-year students. The characters are the same as in "Dent's Second French Book"; the French family visits England, and we read their opinions and thoughts on London. The great difficulty of such accounts is to avoid being too priggish and goody-goody; this pitfall has not always been avoided. There are notes in French at the end of the book explaining the harder phrases, and there are also exercises for revision. So far as we have tested them, they appear correct and satisfactory.

Contes Choisis. Edited by W. Osborne Brigstocke and H. Cammartin. 48 pp. (Dent.) 6*d.* net.—This is another number of Dent's Short French Readers, containing *Zadig* and *Montesquieu et Chesterfield* of Voltaire and the *Rêve de Mangogul* of Diderot. The preface is more likely to be appreciated by teachers than by scholars. The text is accompanied by notes in French and by reform exercises.

O. Feuillet, Vie de Polichinelle. Edited by M. A. Gerothwohl. 48 pp. (Arnold.) 6*d.*—This story will amuse young readers; it is almost too light for class-work. The text is well printed; the only slip we notice is *fort* for *forte* (p. 24, l. 4). The notes are adequate, but we protest against such renderings as "won't the devil make this bore shut up" and "he was bursting with internal rage." The vocabulary shows signs of hurried compilation.

Anthology of French Poetry. Compiled by F. Lawton. xv.+285 pp. (Sonnenschein.) 1*s.* 6*d.* net.—This anthology forms a volume of the Bijou Series, and the compiler's desire was to make it fairly representative of French poetic literature, at any rate of its lyrical element, from the time of Froissart to the present day. The introduction is all too brief, and so are the specimens of poetry; everything apparently had to be "bijou." The number of authors on whose works Mr. Lawton has drawn is very great; some of them we did not know even by name. Personally, we should have preferred to throw overboard Louise Ackermann's painful perversion of Goethe's *König in Thule*, André Gill's horrid *Ballade du nez du pauvre* and other poems, and to have given more space to some of the great masters. Some fine lyrics we have seen here for the first time, and we are duly grateful to Mr. Lawton.

Dans le Royaume des Fées. By Violet Partington. 68 pp. (Marshall.) 9*d.*—This is a second series of French plays for children, which will be welcome news to all who have watched the interest which the first series aroused among their pupils. This time Miss Partington, like the good fairy godmother that she is, presents our boys and girls with *Cendrillon, La Belle et la Bête, La Belle au Bois Dormant*, and *Les Trois Ours.*

Classics.

The Andromache of Euripides. Edited, with Introduction, Notes, Vocabulary, and Appendix, by G. Norwood. lxii.+151 pp. (Murray.) 2*s.* 6*d.*—Our chief criticism of this book is, that the boy who can read a Greek play ought not to have a special vocabulary, but ought to use a dictionary. We urge this the more strongly, because it looks like the precursor of a new series, and quite enough labour has been misspent already on books of this type. Such sections as those of the Introduction on Metre are quite out of place; so are the disquisitions on Greek tragedy, and all the machinery of the stage. Boys who use such books have to pay a dozen times over for the same thing. The notes are also too long; many of them are good, but quite beyond the comprehension of a boy who cannot use a dictionary. We need spend no more time over this discussion; enough has been said to show that the editor is not aiming at a special mark, but letting off both barrels at a covey with his eyes shut. It is well known that no birds are shot in that way.

The Iliad of Homer, Books III. and IV. Translated into English prose by E. H. Blakeney. 56 pp. (Bell.) 1*s.*—We have already reviewed an earlier part of Mr. Blakeney's Homer; this is like to it. The style is archaic; the translation accurate enough in straightforward passages, but in difficulties flighty, and sometimes apt to mislead. See, for example, p. 55, *ἠέριαι*, where he follows Leaf in adopting the less likely sense "early in the morning"; p. 61[2], where *νικήσαντι* is rightly translated, and then explained in the note as having a future sense; p. 63[1], where *τηλυγέτην* is translated alternatively "growing into womanhood," an impossible sense; p. 92[1], where *πολέμοιο γεφύρας* is

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plained in a fanciful way and translated "barriers of man." Mr. Blakeney omits a great many lines of the text which have offended one editor or another, and he is for ever referring to the Bible. There is a great deal of out-of-the-way information added, chiefly in the form of bare references to books which no reader is likely to have. The best notes are those which quote illustrations from English literature; but on the whole they show a conspicuous lack of judgment.

Euripides, Alcestis. Translated by Dr. H. Kynaston. With Introduction and Notes by Dr. Churton Collins. xxx.+44 pp. (Clarendon Press.) 1*s.* net.—We regret that we cannot say very much to recommend this book. The style of the translation is stiff and uninteresting, and its verse is monotonous; the lyrics are anything but lyrical. We infer from the contents of introduction and notes, as well as from the translator's preface, that the book is meant to be used as an English school reader, in order to show outsiders the beauty of Greek drama; but it will hardly serve that purpose: it is not good enough. A verse translation is one of the most difficult things in the world to make, and we wish that so excellent a scholar as Mr. Kynaston had been more successful.

The Medea of Euripides. Edited by H. Williamson. xxviii.+159 pp. With Vocabulary. (Blackie's Illustrated Greek Series.) 2*s.*—We do not at all approve of vocabularies in books of this sort; they are mischievous except in the hands of beginners, and a boy or girl who can read the *Medea* is more than a beginner. Moreover, the greater part of the book is addressed to a more mature mind than the beginner. For him a great part of the introduction and notes would be useless. And the quality is good as a whole; the book does not give the impression which so many school-books do give, of being written to order by a crammer. True, there are unnecessary notes (*e.g.*, 1, 2, 28, 479), but they are few; most of the notes are clear and good; they are really intelligent, especially when the editor touches on the psychology of the characters. He has also some interesting criticisms of Dr. Verrall, whom he is perhaps a little too apt to follow. We may add one or two suggestions or corrections. The κάλως of 278 is not the "sheet," but the rope used for reefing, as may be seen still in the Levantine boats; by means of a loop it was so arranged that a simple pull caught up a large corner of the upper part of the sail and made it smaller, and this was just let out to make full sail again. Our equivalent is to put on every stitch of canvas. Again, the suggested cause for the failure of this play to get the first prize (1021) is not likely, because many other first-rate plays are known to have failed. The Athenian mob was not infallible, and such things as intrigue were known.

The Greek War of Independence (1821–1827). Being a Greek Text for beginners, with Notes, Exercises, Vocabularies, and Maps. By C. D. Chambers. xii.+204 pp.; illustrations and maps. (Swan Sonnenschein.) 3*s.*—This book embodies a good idea well worked out. A subject of interest is chosen, one involving action, a heroic subject in fact, its scene laid in Greece; and it is described in simple ancient Greek, the chapters being graduated in difficulty. A minimum of grammatical information is given, and parts of it indicated for study with each chapter; the notes explain difficulties beyond the scope of a given stage, and add illustrative anecdotes or such historical facts as are necessary for the understanding of the text. The compiler has chosen his words with care, using most of those which Thucydides uses more than twenty times, and more than half of those which he uses ten times: the number of words is about 1,250, the length of the book about 50 pages. Exercises for retranslation are added, in case the teacher wants them. We regret that the vocabulary is printed in very small type—a mischievous thing—but that is almost the only criticism we have to offer. A few words, we think, might be changed (thus δήμῳ, 4^{16}, should be γένει, since δῆμος is properly a political term); but we have read the story with real satisfaction. The pictures represent Greek sites by photograph.

Longinus on the Sublime. Translated by A. O. Prickard. With Introduction, Appendix, and Index. xxviii.+128 pp. (Oxford: Clarendon Press.) 3*s.* 6*d.* net.—This is a very nice little book. The style of the translation is generally clear and simple; its expressions are, as a rule (although not always), natural and idiomatic. Allusions are explained in the notes; and the introduction deals with the general value of the work. In the appendix are collected extracts on literary criticism from several Greek authors. There is no critical work ever written which is better worth reading than Longinus; and we hope everybody who professes to enjoy any literature critically will study it in Greek or in English.

English.

Walter Pater. By A. C. Benson. 226 pp. (Macmillan.) 2*s.*—In this volume Mr. Benson has accomplished a really fine and much needed work. Pater is little known to many people, who have heard just enough about him to run off with utterly unjust and false estimates of his work and character, and as no biography of him has hitherto existed, he has suffered from criticism which will henceforth be wholly inexcusable. These pages at least do him justice, and the portrait here presented by the hand of a deft and sympathetic literary craftsman is one to endear him to thousands no less than to right him in the eyes of popular misconception. In spite of the uneventfulness of Pater's life and his own quiet, retiring habits, the book is one of the best we have lately read, and it ought to win wide recognition as a fearless and almost flawless piece of literary portraiture, while it is also the first attempt to write a book upon one who certainly deserved his place among English men of letters. The things that could be quoted from these pages are numerous, and we must refrain; but we should like to draw attention to Mr. Benson's treatment of Pater's attitude towards Wordsworth, his relations with Jowett, his caricature by Mr. Mallock in "The New Republic," and his contrasts and resemblances to the late Prof. Sidgwick as being especially worthy of notice. The remarks upon Pater's achievements in English prose on p. 115, and on the usual type of composition which is the outcome of our English system of education on p. 116, are also worth pondering, no less than the critical estimate of his style in the last chapter, which culminates in what Pater himself would have been quite content with as the highest praise he could desire, namely, that "he realised his own conception of perfection."

Lamb's Tales from Shakespeare. By T. H. Flather. xv.+160 pp. (Cambridge University Press.) 1*s.* 6*d.*—This is a second selection from the pages of one of Lamb's happiest literary efforts. Like the first selection, it is only deserving of praise, and it is likely to prove a useful reading-book for juniors. Only a short introduction and glossary are given to this volume, but in an appendix some passages from the plays on which the selected Tales are founded are happily provided. As an introduction to Shakespeare study the book is capital.

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In the Days of Chaucer. By E. E. Ohlson. 38 pp. (Blackie.) 4*d*.—This little work is described as a pastoral interlude in two scenes. No less than twenty characters are required. The measure is blank verse, and the verse is by no means bad of its kind. As a school play it would doubtless be found useful, especially as the directions given are sufficient to make it easy to act. It would certainly tend to introduce junior and middle forms to Chaucerian study.

Selected Poems of Matthew Arnold. By R. Wilson. xv.+111 pp. (Arnold.) 1*s*. 6*d*.—This selection is capitally done, and contains much of what is really best in Arnold's poetry. There is a good introduction, intended primarily for the teacher, and some excellent notes are added, adapted to the needs of pupils in the middle and upper forms of secondary schools.

The Age of Chaucer. By J. C. Stobart. vi.+136 pp. (Arnold.) 1*s*. 6*d*.—Although this book is the first volume of a series projected to deal with the successive epochs of English literary history, it is not, as the title might seem to imply, a detailed account of the period with which it deals, but merely a collection of poetical illustrations. As an anthology it may be commended for educational purposes, for it contains much interesting and unfamiliar matter, including some of the celebrated Paston letters; and an introductory chapter deals satisfactorily, if briefly, with Chaucer's literary predecessors and successors. Several poems of unknown authorship are given; also selections from Robert Manning, Sir John Maundeville, "Piers Plowman," and Sir Thomas Malory. Likely to be useful in the hands of a capable teacher.

Pearl: a Fourteenth Century Poem. Edited by G. G. Coulton. viii.+51 pp. (Nutt.) 1*s*. net.—This elegant little book gives us in modernised form one of the most beautiful of the poems to be found in middle English literature. In so dealing with this work Mr. Coulton has done a great service to students, for the original cannot be easily read without much wearisome toil in scholarship. In this version the original metre is closely followed, and the soul-stirring cry of a father's heart at the grave of his two-years-old infant girl is now easily accessible to all who are interested either in the humanity or the literature of times now long past. Mr. Coulton deserves warm thanks and congratulations upon this effort to make the past live again for us, disclosing as it does the essential oneness of human nature at all periods of history.

The Liverpool Students' Song Book. 164 pp. (Williams and Norgate.) 2*s*. 6*d*. net.—This is a collection upon which the new University of Liverpool has cause to congratulate itself. It is indeed strong in local colour; but it also provides expression for every aspect of life common to undergraduate experience. Some hymns are included, followed by a selection of student songs largely imported from Germany; these, again, by another more especially concerned with the undergraduate as a member of the human family, a number of sailor songs, and some stimulating students to work. The whole, both as regards words and music, is well printed, and the binding is elegant.

History.

Gateways to History. (Arnold.) Book I., Heroes of the Homeland, 112 pp., 10*d*. Book II., Heroes of Many Lands, 142 pp., 1*s*. Book III., Men of England, 192 pp., 1*s*. 3*d*. Book III. A, Men of Britain, 224 pp., 1*s*. 6*d*. Book IV., Wardens of Empire, 224 pp., 1*s*. 6*d*. Book V., Britain as Part of Europe, 256 pp., 1*s*. 6*d*. Book VI., The Pageant of the Empires, 256 pp., 1*s*. 6*d*.—We much admire both the idea and the execution of this series. The books are well written, accurate, and pleasant reading. They are well supplied with good pictures. The first consists of simple stories from English history, the second of similar stories taken from a wider range—Confucius, Geneviève of Paris, Mungo Park, to select two or three at random. The third is an English history reader, with special references to Wales (there are chapters, *e.g.*, on Owen Gwynedd and Owen Glendower). The fourth is similar, but with special reference to Scotland and Ireland, with chapters on St. Patrick, Strongbow, Bruce, &c. "Wardens of Empire" begins with Prince Henry of Portugal, Columbus, and other discoverers, and traces the story of the British Empire to the present day. Book V. deals with the ordinary history of Britain and its relations with the Continent, and tells much besides of the history of other countries, forming a useful introduction to world history. Specially interesting is the chapter specifically devoted to the "Holy Roman Empire." Finally, Book VI. sketches, in brief chapters, the empires of the ancient world, and under the title of the "Settlement of the Nations" gives an idea of European history. It is really wonderful how, within such narrow limits, the author has managed to convey so much history that will never need to be unlearned. Of course, the simpler books contain legends and unauthenticated tales, but they are told as such; and the later books are really sound history told in simple and interesting language.

Principles and Methods of Taxation. By G. Armitage-Smith. vi.+195 pp. (Murray.) 5*s*.—To those who have become quite perplexed with our recent fiscal controversies, and who want some clear guidance in matters of taxation, we recommend the study of this little book. It sets forth in clear and readable fashion what is sufficient for the ordinary reader to enable him to understand the principles which should guide him in forming an opinion on matters of immediate concern. First, the need for taxation is expounded, and the objects for which Government requires money are described. Then general principles are laid down, which should guide the choice of methods of taxation. Afterwards, our actual taxes are described and discussed, and their incidence pointed out. This is followed by an account of our national debt and those of other nations. A chapter is given to the finances of India and France for purposes of comparison, another to an account of local taxation, and, finally, there are supplementary tables and a bibliography. The author is an obviously convinced free-trader in the old acceptation of that word, and the breezy coolness which pervades the whole book makes it a good antidote to much of the heated controversy in which the nation was lately involved.

London, Historical and Descriptive. By B. Jonson. 255 pp. (Blackie.) 1*s*. 6*d*.—The title indicates the order of thought in the author's mind. We have here, so far as space permits, a sketch of the history of London involving a description of the places famous in the history. The text is written by one who knows the history well, and has gone to the best sources. It is pleasingly written, and illustrated with a large number of good pictures. There are three appendices, one a list of chief events chronologically arranged, another a chronology of London's architecture, and a third consisting of five London songs set to music in both notations. We do not remember to have seen a better reader for London boys and girls, and we should like every young Londoner to read it.

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God Save King Alfred. By E. Gilliat. ix.+422 pp. (Macmillan.) 2*s.* 6*d.*—This would please Alice, for it is nearly all conversation, and there are eight illustrations. It is written by an enthusiast for King Alfred, and it appears to be romance rather than history. Certainly the endeavour to represent the language of King Alfred's time in language understood by modern English boys and girls strikes us as rather rash. Still, it will please our youngsters.

A Historical Geography of the British Colonies. By C. P. Lucas. Vol. I. The Mediterranean and Eastern Colonies, revised by R. E. Stubbs. vii.+304 pp. (Clarendon Press.) 5*s.*—This is the second edition (we suppose of the first volume only) of a work apparently in four volumes. This part may be described as a handy encyclopædia of its subject. It is well supplied with maps, and contains a history (reaching as far back in each case as possible) of every possession and protectorate of Great Britain in Asia and the Mediterranean, excepting India and Egypt. Thus, besides accounts of the present condition of the British Empire in the East, we have incidentally accounts of Crusades, apropos of Cyprus and Malta, and of religious and race struggles in Asia, apropos, *e.g.*, of Ceylon and Hong-Kong. It should be consulted by every teacher of history or geography.

Geography.

Asia and Australasia. 224+80 pp. (W. and R. Chambers.) 1*s.* 9*d.*—This book is one of Chambers's Geographical Readers of the Continents. It has illustrations, many of which we seem to recognise as old friends, and maps, some of which are good. The spelling of the latter is not on all fours with the spelling of the text. The diction of the writer is clear, and as a rule simple, though he (or she?) is hardly justified in classing pearls among the "treasures of the mighty *deep*." Why, too, does he interpolate a chapter on Ceylon between British Burma and the rest of India? This, with some of the pictures and some of the maps, seems to revert to a somewhat antiquated type of geography, notwithstanding the "1905" imprinted on the title-page.

Illustrated Catalogue of Instruments for Physical Geography, 1906. Philip Harris and Co., Ltd., Birmingham and Dublin.—Secondary-school teachers should send for this illustrated catalogue. It is a practical attempt to supplement the suggestions of the Board of Education in its recent circular to secondary schools. In it the outdoor geographer will be able to make acquaintance with the best and cheapest "lines" (we believe this is the correct technical term) of plane tables, trough compasses, clinometers, land chains, surveying rods, sextants, hygrometers, *et hoc genus omne*, and if he do not purchase some of them—well, it will not be our fault.

Mathematics.

Mathematical Drawing. By G. M. Minchin and J. B. Dale. vii.+145 pp. (Arnold.) 7*s.* 6*d.* net.—It is not very easy to characterise in a few words the nature of this book. A considerable portion of it is devoted to the discussion of equations whose solutions can be obtained by graphical methods; equations of various types are treated with great care, and are amply sufficient in number and variety to enable a capable student to attack new types with good hopes of success. The use of dipolar co-ordinates is fully explained and illustrated, and numerous examples to which these co-ordinates may be applied are provided. The construction of conics from given data, and the applications of projection, furnish many simple and interesting exercises in geometrical drawing; the careful working of these sections would form an admirable discipline for the mathematical student, and would teach him much that is often withheld in the study of geometrical conics. It would be a great advantage to every student of pure, as well as of applied, mathematics to undergo a discipline such as this book provides.

Elementary Algebra. Part I. By P. Ross. viii.+272+(Answers) 43 pp. (Longmans.) 3*s.* or (without Answers) 2*s.* 6*d.*—The range of Part I. of this text-book, which is stated to be "for the use of higher grade and secondary schools," is in general terms from the first notions of generalised arithmetic up to, and including, simultaneous quadratic equations. As is now usual in elementary works, graphical methods are freely used, and the general principles underlying these methods are clearly stated and illustrated. Considerable attention is paid to the important subject of algebraic form, and while arithmetical illustrations and verifications are constantly employed, the logical development of algebra as generalised arithmetic is the dominating idea of the book. The examples for practice are varied and numerous, and contribute very materially to the making of a book which seems to us to be written on the right lines, and to be a good type of what an elementary text-book should be.

Clive's Mathematical Tables. 49 pp. (Clive.) 1*s.* 6*d.*—This collection consists of five-figure tables of logarithms, antilogarithms, natural and logarithmic circular functions and radians, each separate table being printed on two facing pages. In addition to the usual mean differences for a whole line, there are in certain cases mean differences for half the line; but there is, besides, a special device for enabling the calculator to obtain still greater accuracy. How far this special device will be really useful can only be tested by practice; its use demands care, but it is possible that it may be of advantage to some calculators. The type of the figures is good, but the page, as a whole, strikes us as being rather crowded. Of the forty-nine pages, thirty are devoted to explanations of the tables and exercises; though these will no doubt be useful, we think that, as a rule, a collection of tables should contain as little as possible beyond the tables themselves.

Five-Figure Mathematical Tables for School and Laboratory Purposes. By A. du Pré Denning. 21 pp. (Longmans.) 2*s.* net.—The collection consists of five-figure tables of logarithms of numbers and reciprocals, of natural and logarithmic sines, cosines, tangents and cotangents, and of squares and cubes; there is also a table of "Useful Data." The arrangement differs in several respects from that in common use. Thus, the logarithms of numbers from 4·00 to 9·99 are given on one page, while on the page facing it are found the antilogarithms from 0·000 to 0·609, the entries being given directly to three significant figures. This method has the undoubted advantage of discarding those parts of the ordinary tables where the differences are considerable, though it has, of course, disadvantages that will be differently estimated by different people. The interval of tabulation for the trigonometric functions is 10′, but the mean difference for 1′ per 10′, instead of the usual 1′ per 60′, is given. It seems a pity that the name of the functions does not appear at the head of the columns on pp. 14 and 16. The tables are clearly printed on a large page, and, so far as a comparatively slight examination shows, strike us as being handy and well arranged.

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The Elements of Plane Geometry. By E. J. Edwardes. viii.+218 pp. (Arnold.) 3*s.* 6*d.*—The aim of the writer of this text-book, which is designed to be a substitute for Euclid, is stated to be that of unfolding the elements of plane geometry "in the simplest and easiest manner possible." However laudable the aim may be, we fear there is little agreement as to what this simplest and easiest manner is; in any case we can hardly accept the treatment in the book before us as satisfying our notions of this ideal. Yet the general arrangement of the propositions and the manner of discussing them show considerable independence of judgment, united with simplicity of treatment, and are worthy of more than a passing glance from teachers who are in search of alternatives to the Euclidean tradition. In addition to the subject-matter of Euclid's first six books, there are sections on what used to be known as "Sequel to Euclid": radical axes, anharmonic ratios, &c. The statement on p. 144 as to the incommensurability of π is rather astonishing. What of the work of Lambert or Lindemann?

Trigonometry for Beginners. By J. B. Lock and J. M. Child. viii.+195 pp. (Macmillan.) 2*s.* 6*d.*—Very little knowledge of geometry is presupposed in the users of this text-book, and the practical applications of trigonometry in problems of surveying are treated very fully at an early stage. For pupils who need a course of this kind the book is eminently suitable; tables of the trigonometric ratios and their logarithms are given, and the method of using them carefully explained. The latter part of the book discusses radian measure and the ratios of angles greater than a right angle, so that a student who has mastered the whole work should be ready for various examinations, even though it is not specially designed for examination purposes.

Science and Technology.

The Future in America. By H. G. Wells. 1–359 pp. (Chapman and Hall.) 10*s.* 6*d.* net.—All that Mr. Wells writes is interesting, and it makes the reader think. To dismiss this book by saying that a cursory visit should not have occasioned it is unfair: the writer again and again pleads for it as an impression. To compare it with "The Land of the Dollar" is equally unfair: for Mr. Steevens wrote mainly of the currency question. Mr. Wells is very frank; we hear a great deal about him before we are allowed to get through the wicket at Ellis Island. He has eschewed sights: he did not see Chicago shops: he nearly avoided Niagara: the great parks are barely mentioned: but he saw, as Odysseus did, things and men. For things, he saw and worshipped the turbines at Niagara, the manufacture of Americans at school, the plans for the indefinite enlargement of Boston; and in all of them he saw Mind. For men, he saw an imprisoned "Anarchist," a statesman negro, Maxim Gorky, and—America in little—the President. The impression produced is kaleidoscopic; but there emerge—Force, Mind, Self-sufficiency. Near them are their shadows—want of plan, want of soul, want of heart. The book is direct and painfully honest; and the whole result is a picture of something immensely great—and immensely sad. There are one or two slight errors which will probably be corrected: is it fair for us to ask Mr. Wells not to call "The Princess" "that thing of Tennyson's"?

A Century's Progress in Astronomy. By Hector Macpherson, jun. xi.+245 pp. (Blackwood.) 6*s.* net.—Though astronomy has no place in the school curricula of to-day, the discoveries made since Sir William Herschel commenced his survey of the heavens are of deep interest to many students who are not attracted by other branches of science. Mr. Macpherson's volume contains an accurate and readable synopsis of what has been accomplished during more than a century of inquiry into celestial secrets. After describing Herschel's work, separate chapters are devoted to advances in our knowledge of the sun, moon, planets, comets, and meteors; and then in five more chapters various aspects of the stars and the stellar universe are considered. A large amount of information is given in the volume, and practically all observers who have contributed to astronomical progress since about the middle of the eighteenth century are mentioned. As a concise statement of work done, conclusions arrived at, and speculations advanced in this period the book is a useful one to possess, and would form a satisfactory introduction to the more elaborate works by Miss Clerke on the history of astronomy. There are no illustrations.

Elementary Science of Common Life (Chemistry). By W. T. Boone. 252 pp. (W. B. Clive.) 2*s.*—In writing this little book the author has apparently had in mind the minimum needs of candidates presenting themselves for the examination of the Board of Education in its new subject, known as subject xxvi., with the name used as the title to the volume. This striving after brevity has in many cases resulted in ambiguity. The style in which the chapters are written leaves much to be desired, and the punctuation is often bewildering. Those students who master the contents of the book will have no difficulty in satisfying the examiners of the Board of Education, but as an introduction to physics and chemistry the volume can hardly be recommended.

A Three Years' Course of Practical Chemistry. By George H. Martin and Ellis Jones. With an Introduction by Prof. J. B. Cohen. Third Year. viii.+112 pp. (Rivingtons.) 2*s.*—The first and second years of this work have already been noted in The School World for March, 1906; the third year's course is designed to acquaint the schoolboy with the principles of the atomic theory and to take him far enough in the study of the commoner non-metallic elements to enable him to acquire from text-books the necessary knowledge of the remaining elements. Prof. Cohen's preface is again included, and, seeing that its doctrine is far from being followed in the book, might well have been omitted. In fact, it is necessary to protest emphatically against such a book as this being put forward as representing a system of science teaching based on practical work and its intelligent application to theory. Almost every page is hopelessly unpractical; the very first experiment may be quoted in illustration. The pupil is told to reduce from 1 to 2 grams of cuprous oxide to metallic copper in a piece of ignition tubing, then to weigh the copper and dissolve it out with nitric acid. There is no idea given as to how much or what strength of acid should be used and the beginner who used strong acid would get himself into serious difficulty. He is then instructed to precipitate the boiling copper solution with strong caustic soda and wash the precipitate thoroughly with hot water. We fear the pupil would encounter endless trouble in dealing with such a large bulk of precipitate. The precipitate is then to be dried, ignited and weighed; from the result the student is expected to find the weight of oxygen which is combined with 1 gram of copper in each of the oxides and obtain a result in agreement with Dalton's theory. We venture to think that the

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first half-dozen trials would give results very far from the truth. Such an experiment, done in a manner to be of any real value, would take several weeks to carry out and would then afford a most excellent piece of manipulative training. Done in such a way as the authors' meagre eight lines of instructions imply, it is worse than useless.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Practical Studies in Schools.

As numerous applications have been made for copies of the report of the committee appointed by the British Association "to report upon the courses of experimental, observational, and practical studies most suitable for elementary schools," the council of the association has reprinted the report.

I shall be pleased to supply copies to inspectors, teachers, and others, on receipt of a stamped addressed envelope.

W. MAYHOWE HELLER,
Secretary to the Committee.

40, Upper Sackville Street, Dublin.

The Board of Education and its Regulations.

IN your issue of November reference is made to the frequent changes of syllabus and regulations which are made by the Board of Education from time to time. It seems perhaps a little out of place to find fault with the Board for making changes when one is about to advocate a change of a more far-reaching character than any that have yet appeared; but the root of the difficulty seems to be in the fact that, in making changes, the Board does not study the real position and demands of the schools. The changes made suggest the idea that some official, after spending a month on filling up schedules and checking registers, feels desirous of asserting his individuality more potently; so he hunts around to see how he can interfere, adds a subject to the syllabus, and exclaims triumphantly: "Who says we are not active at the Board of Education?" An additional subject in an examination for teachers is enough to produce irritation, but quite insufficient to influence the schools; it will be crammed up from a book for the examination, and forgotten as soon as practical work is commenced.

The position, in fact, reminds one of Mr. Dooley's visit to an up-to-date kindergarten, where he saw one lad pulling another lad's hair. "Mary Ellen," said the philosopher to the mistress, "why don't ye take the coal shovel to that little barbarian?" "We don't believe in corporeal punishment," says she; "th' child whose hair is bein' pulled is larnin' patience, an' th' child that's pullin' th' hair is discov'rin' th' footility iv human indeavor." So with us; the schools are learning patience, and we hope that the Board of Education will some day learn the futility of official endeavour, and that it will then allow the schools to be managed in accordance with the demands of those who use them.

Now there is one great and far-reaching change urgently demanded by secondary schools which the Board of Education must make before it can recognise their work with any advantage, viz., the recognition that the term, and not the year, is our unit of work with reference to the formation of classes, promotions, boys entering and leaving the school.

Parents enter and take away boys according to the term, without any reference to the year; masters are engaged and paid by the term, and promotions must necessarily take place according to the term.

Again, boys progress at very unequal rates; in any scheme of work laid down for boys of twelve to sixteen, some clever boys will get through it in two years, whereas others will not complete it in seven: it is as far from the facts to assume that all, or nearly all, will be fit for promotion at the end of a year as to assume that none will be fit for promotion at the end of a term. In assuming that they are, as at present, the Board of Education is assuming a fiction.

If this assumption of the Board were carried out in its entirety, the following would be the result. The upper classes in the Midsummer term would be reduced to about half the numbers with which they commenced in September. The lower classes, in which the new boys entering at Christmas and Easter were placed, would be full to overflowing. All classes would contain boys who were utterly unfit to work together, the clever boys having progressed so much more rapidly than the dull boys that no work could be done which would suit both.

The Board of Education will probably think the substitution of the term for the year too revolutionary; it has got into the groove of working by the year, and does not see how a term unit can be introduced. A few suggestions may therefore be given to show how a term unit may be introduced without producing a scheme too different from that at present in force. These suggestions involve the abolition of the four years' course, and the substitution of a higher standard (present third and fourth year) and a lower standard (present first and second year), and the promotion of boys, not by time, but by fitness.

REGULATIONS.

(1) The headmaster shall forward the curriculum of the whole school showing a progressive course for all boys, commencing with the lowest age at which boys enter.

(2) This curriculum shall show at what "form" or "set" in the school boys pass from the lower to the higher standard, at the average age of about fourteen.

(3) Registers shall be kept showing the attendance of each boy per term, and shall be forwarded to the Board at the end of each term.

(4) The register shall show the following details:—

(*a*) Whether a boy is in a higher "form" or "set" in some subjects than in others.

(*b*) How long each boy has been in his present "set" or "form."

(5) Promotions from one "form" or "set" to another, or from the lower to the higher standard, may be made at any time.

Grants will be paid according to the term attendances, at the rate of n shillings per boy in the lower stage, at the rate of y shillings per boy in the higher stage.

The following points are of less importance, and may be left for future consideration.

The values of n and y; to what extent one or the other would be payable—on a young boy in the higher standard, on an older boy in the lower standard, on a dull boy remaining a long time in a low form; the age or standard at which grants should begin and cease; the amount of absence to disqualify for a grant.

The above is a brief outline of a scheme which would bring the Board of Education requirements into harmony

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with the actual state of things existing in schools. At present, schools pretend that they are working by the year when they are really working by the term. Many of the officials at the Board of Education are themselves public-school men, and as in public schools promotion has always been dependent upon those entering and leaving each term, it is difficult to see how they can ever have contemplated that a school could be run on any other lines.

It has been suggested to me by an official of the Board of Education that headmasters generally recommend, or should recommend, to parents that Midsummer is the best time for boys to enter and leave the school. Personally, I do nothing of the kind. I always tell parents that Easter is the best time to enter, because the summer, with its cricket and its open-air life, is the happiest term for a new boy at a large school. As to leaving, the only cases in which we can influence parents are those in which the boys proceed to places of university rank. In a school whence the great majority of boys proceed straight into business, a boy must leave school when the parent obtains a suitable opening for him, and neither the schoolmaster nor the Board of Education has a word to say in the matter.

Catford. C. M. Stuart.

A Science Syllabus for Preparatory Schools.

Your correspondent, Mr. E. J. Petitfourt, brings forward in your November issue a proposal which is both detrimental to the true interests of science teaching, and which has already been rejected deliberately by a body of science masters well qualified to express an opinion. Some three years ago, immediately after the establishment of the Common Examination for Entrance to Public Schools, there was appointed by the Public Schools Science Masters' Association a sub-committee for the purpose of considering what form of science teaching was best suited to preparatory schools. Of that sub-committee I had the honour to be chairman, and thus (apart from requests received on the present occasion) it devolves upon me to ask you to insert this reply.

I need not enter into a detailed account of the labours of our sub-committee: our report embodied a scheme of work suitable to preparatory schools, and was published in the *Preparatory Schools Review* for March, 1905. The scheme extends over seven pages in double column, and is arranged (1) under the headings "Botany," "Zoology," and "General"; (2) as a working calendar for guidance of teachers. Each section was prefaced with a caution advising the teacher to select only such portions as seemed appropriate to his own circumstances. It was further stated in a list of recommendations that "*definite courses of botany, zoology, physiography, &c., are to be avoided.*" (The italics are my own.) The above will make it clear that Mr. Petitfourt's suggestion has been considered and rejected as unsound. To the best of my recollection, not one voice was raised in favour of such proposals, either at any meeting of the sub-committee or at the general conference of the P.S.S.M.A.

To turn to the reasons on which our decision was based:—(1) At preparatory schools trained science masters are rare, and the work must generally be in the hands of an amateur. There are plenty of amateurs with a taste for some branch of natural history or science, and such will be able to use their own hobby as a successful instrument of education. It is most essential that the work be undertaken *con amore*. (2) The object of preliminary science work is, above all things, to develop the powers of observation and to arouse an intelligent interest in natural phenomena, but not to impart a *systematic* training. In fact, its very purpose is to establish the habit of picking up the "odds and ends," of which Mr. Petitfourt speaks so contemptuously, at all times, both in and out of school. The imposition of a cut-and-dried schedule of science work upon preparatory schools could result only in disastrous cramping of opportunity and quenching of the spirit of inquiry which is inborn in every healthy child.

So far from the science at present approved by the managers of the Common Examination having a discouraging effect upon the preparatory schools, my experience is the exact opposite. I have marked the papers of candidates for Charterhouse on several occasions, and, speaking generally, the number of those offering science is steadily increasing, and the standard of attainment improving in a very encouraging degree.

Oswald H. Latter.

Charterhouse, Godalming.

"Studies in the Sermon on the Mount."

I have read with astonishment the review in the November number of The School World of Canon Lyttelton's "Studies in the Sermon on the Mount." Your reviewer says, "Mr. Lyttelton has not been able wholly to shake himself free from the predispositions of his cloth." Why on earth should he? If a clergyman of the Church of England of Canon Lyttelton's standing is not more or less of an expert on theology, who is? You do not expect a professor of natural science, for example, to forget his training when he writes a scientific treatise. Is an agnostic the only sort of person qualified to write on religious subjects? The *ipse dixi* of your reviewer, "We do not think that He who uttered the Sermon on the Mount would have said that any Sacraments are essential to salvation," is an interesting expression of opinion, but if it carries any conviction with it, it is simply that he is not qualified to review theological books. His sneer at the want of "logical clearness" among dignitaries of the Church is as beside the point as it is impertinent in the narrower sense of the word.

W. Herbert Hodges.

Merchant Taylors' School, E.C.

The reviewer has no remark to make. The review and the letter must speak for themselves.

Editors.

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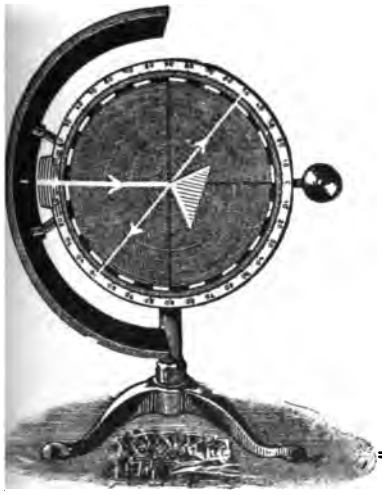

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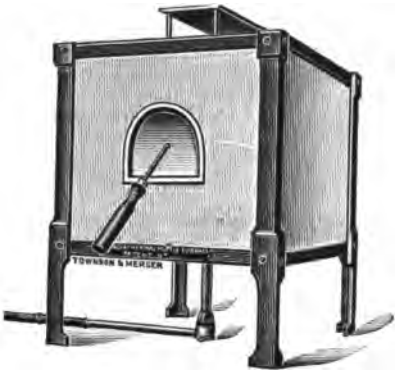

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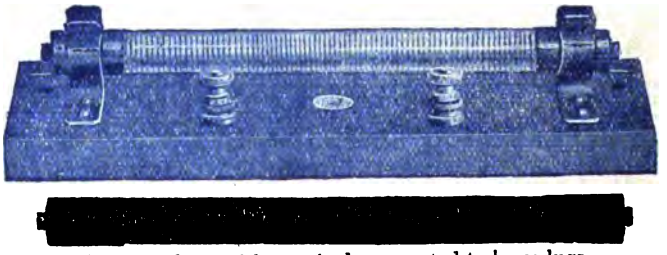

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